

COMMITTEE OF THE WHOLE

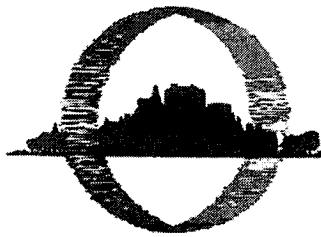
**Room 104 – City Hall
SEPTEMBER 29, 2003
4:15 P.M.**

PAGE

Recessed Council Meeting

(1-46) 1. Review of 60th Avenue Expressway Corridor
Management Plan (Attachment)

(47-71) 2. Presentation of Circle Drive Traffic
Management Plan (attachment)

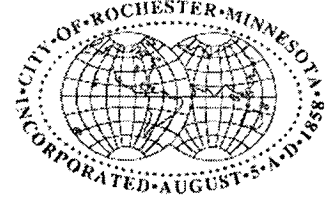


ROCHESTER-OLMSTED PLANNING DEPARTMENT

2122 Campus Drive SE, Suite 100, Rochester, MN 55904-4744

www.olmstedcounty.com/planning

COUNTY OF
Olmsted



MEMORANDUM

TO: Rochester City Council / Committee of the Whole

FROM: Charles Reiter
Senior Transportation Planner / Planning

DATE: September 25, 2003

RE: Review of Corridor Management Policy Guides for the 60th Ave NW Expressway and Circle Drive Traffic and Management Study

On Monday I will be reviewing with the Council two Policy Plan Reports, one dealing with the proposed 60th Ave NW Expressway and one dealing with the Circle Drive Corridor. Members of the Council and the Mayor who participate in ROCOG were present for a review of this material at a ROCOG meeting on 9/25, at which time ROCOG endorsed both of the Policy Plans.

These Policy Plans are intended to provide a framework, similar to the Land Use Plan or Thoroughfare Plan, for responding to private development proposals and traffic management issues along these two corridors, as well as providing information on future capital improvements that are anticipated in order for these corridors to function as expressways providing high levels of capacity and mobility. The nature of the corridors are somewhat different, in that Circle Drive is already constructed and the main goals are to preserve a high level of mobility in a corridor already being stressed in certain locations with traffic growth, while with 60th Ave NW (which forms the eastern boundary of the new Orderly Annexation Area with Kalmar Township) the main goal is to preserve a right of way corridor and control access locations to permit future construction of a high level expressway.

Attached are materials related to these each of the Policy Reports. It is our intent to submit these documents to the Council at a future regular meeting for adoption so that they can be recognized as part of the City's Comprehensive Plan and utilized in the review of future development and traffic issues. Referring to the handwritten page numbers in the upper right hand corner, what you will find is

- *NOTE → ○ Page 3 is the start of a three page memo summarizing the contents of the 60th Ave Corridor Management Plan (this would be what you want to review before the meeting if anything)
- Pages 7 thru 46 are the full Corridor Management Plan document.
- Page 47 is the beginning of an introduction to the ROCOG Circle Drive Traffic and Access Management Plan. I will cover most of this in my presentation Monday
- *NOTE → ○ Page 56 is the start the seven page Policy Guide ROCOG endorsed. (This would be what you want to review before the meeting if anything)
- Page 63 is the start of a set of illustrations highlighting the outstanding issues we see on Circle Drive

ROCHESTER - OLMSTED COUNCIL OF GOVERNMENTS
2122 CAMPUS DRIVE SE
ROCHESTER MN. 55904-7996
PHONE (507) 285-8232
FAX (507) 287-2275

MEMORANDUM

TO: Rochester City Council Committee of the Whole

FROM: Charles Reiter
Senior Transportation Planner

DATE: February 18, 2003

RE: 60th Ave Expressway Corridor Management Plan

INTRODUCTION

The 60th Ave NW Corridor Management Plan (CMP) is intended to provide a framework that will result in the ultimate development of an expressway on the west side of the urban area of Rochester which will provide a high level of service in terms of traffic mobility.

The CMP contains recommended policies that should be used as a guide during consideration of land development proposals as well as capital improvement programming and highway design. The policies should be seen as being part of or a supplement to the Long Range Thoroughfare Plan designation of 60th Ave as a future expressway, serving as sort of an "implementation guide" to ultimate development of the expressway.

The CMP should be used as a tool by city, county and township planning and zoning officials, planning commissions and elected officials as they review development proposals. The principles of this document should be used as a benchmark against which development plans and roadway upgrade plans (in the case of 60th Ave and 75th St) should be measured.

This Plan has been reviewed and endorsed by ROCOG. In order for it to have official standing as a part of the Comprehensive Plan of the City, it should be considered for adoption by the City Council. It is our intention that this would be presented to the Planning Commissions for their use after adoption, unless the Council should desire they review it in advance of adoption.

SUMMARY OF THE REPORT RECOMMENDATIONS

The specific topic areas that the report addresses are as follows:

Roadway Design (page 11) - There are five design policies included as well as an illustration of the typical roadway cross section that should be planned for (see figure 4 on page 12)

Traffic Management (page 13) – There are six traffic management policies included, addressing the issue of location and design of access to the corridor and median openings, and

expectations regarding future signal spacing. The fundamental philosophy is to ultimately have signalized intersections spaced ½ mile apart, with unsignalized median openings halfway between signals, effectively creating a corridor with access every ¼ mile. The ½ mile spacing of signals would provide the greatest flexibility to maintain average travel speeds of about 40 MPH over a range of traffic volume conditions and would provide the ability to establish a system with progressive traffic flow in both directions.

Access Management (page 17) – There are six access management policies included addressing the need for complementary local road systems, the ability for additional inbound right turn access at selected locations, the proximity of driveways to intersections along 60th Ave on the cross streets, and how existing driveways and proposed “Exception Parcels” will be handled in the interim period proceeding full development of the ultimate expressway.

Non-Motorized Accommodations (page 20) – There are two proposed policies on accommodating pedestrians and bicyclists which call for development of detached paths on both sides of the corridor, and ultimate development of paved shoulders of adequate width on the roadway for use by highly skilled cyclists who prefer to ride on the roadway.

Intersection Design (page 21) - There are five elements of ultimate intersection design that are listed as part of one policy found on page 21-22. This policies discuss the need to include a) median refuge areas, b) controlled slip ramps and c) the ability to accommodate, if needed in the future, up to three through lanes, special transit – only lanes or dual left turn lanes on the 60th approaches to major intersections. Figure 11 on page 22 illustrates what an ultimate approach might consist of. A total of 225 feet of right of way on the 60th Ave approaches to major intersections should be planned for. The basic right of way for the corridor should be planned to be 200 feet.

Transit Accommodations (page 26) - There are 2 proposed policies on accommodating transit services which address the desire to encourage planning for future park and ride facilities, and to incorporate features into the ultimate design that can be used to provide operational priority to transit vehicles.

Land Use Development Policy (page 27) – There are nine policies proposed that address issues such as

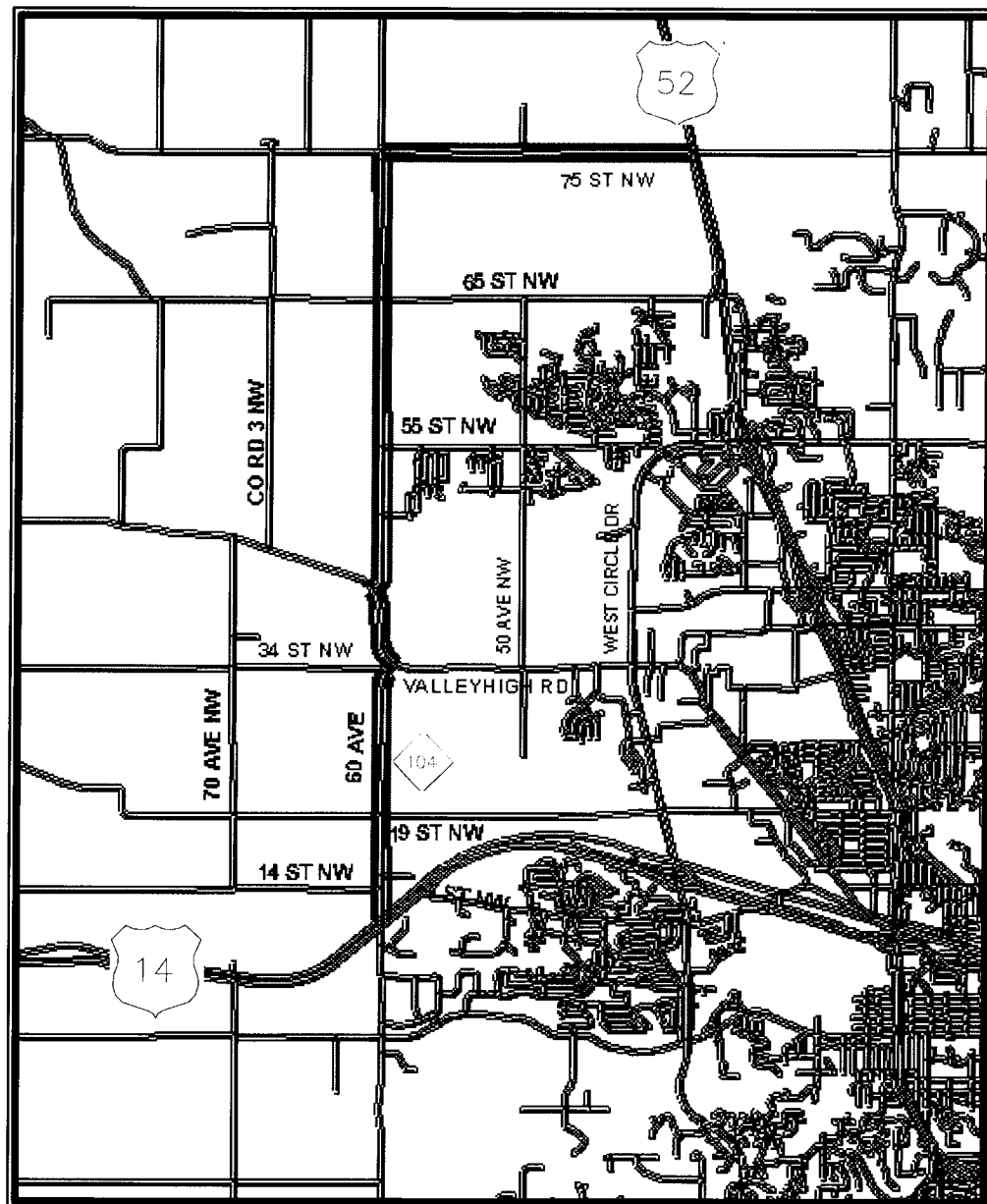
- the scale of development planning that should be encouraged (larger is better, with 160 acres a recommended minimum size) (Policy #1)
- the need to develop a complementary secondary/local street system that will fit with the access limitations to be planned along the corridor (#2 and #3)
- the preference to not isolate all land use from the corridor through back-lotting property development to the corridor (#4)
- the need for frequent pedestrian / bicycle connections from neighborhoods to the trails to be built along the corridor (#5)
- the need to plan for addressing future noise impacts (#6)
- the need to plan for adjacent local road systems that connect adjacent properties, creating frontage or backage road type systems that provide for continuity and keep local traffic off the expressway (#7)
- the need to plan parking and signage in such a way to enhance the visual character of the corridor (#8 and #9)

On Page 31 there are a number of recommendations found in the section titled "Adoption of Planning Guidance for the Corridor" that desirably will be followed up on by the identified jurisdictions. The first 2 bullets have been presented to ROCOG and will be presented to the City Council and County Board in the next two months. The remaining bullets are items that need to be coordinated between the city and county in a joint effort to insure successful development of an ultimate expressway at the least public cost. Protection strategies such as an Official Street Map are particularly important. The section at the bottom of page 31 talks about right of way dedication, which needs to be implemented during the general development plan and platting processes of the city. On page 32 is an illustration indicating the recommended right of way widths based on the typical cross sections proposed for the corridor.

The final page (p. 33) talks about consideration of Corridor Management Ordinance. Many of the policies of this plan can be implemented during the normal course of the development review and capital improvement program processes without the need for a special overlay ordinance. However, there may be some controls (such as special sign regulations and interim use regulations) that are administered by staff which would benefit from being incorporated into an ordinance. An overlay ordinance is not a critical step at this time but may need to be considered in the future.

CORRIDOR MANAGEMENT PLAN

60TH AVE NW / CSAH 14 EXPRESSWAY



CORRIDOR MANAGEMENT PLAN

60TH AVE NW / CSAH 14 EXPRESSWAY

Prepared by:

**Rochester-Olmsted Council
of Governments**

&

City of Rochester

September 2003

Preparation of this document is financed in part by the Federal Highway Administration as referenced in the ROCOG 2003 Transportation Work Program under Work Task 2321. Any questions or comments in regards to this report should be directed to the Rochester-Olmsted Council of Governments at 2122 Campus Drive S.E., Rochester, MN 55904

Telephone (507) 285-8232

Fax (507) 282-0956

TABLE OF CONTENTS

INTRODUCTION.....	1
PART I: PROJECT BACKGROUND.....	3
CURRENT ROADWAY	3
CURRENT LAND USE	3
ORDERLY ANNEXATION AND GROWTH BOUNDARY.....	5
IMPLICATIONS OF PROPOSED RUSA CHANGES	5
GOALS AND OBJECTIVES OF THE CORRIDOR MANAGEMENT PLAN	6
PART II: SYSTEM PLANNING.....	7
SYSTEM DEVELOPMENT	7
THOROUGHFARE PLAN.....	8
FUNCTIONAL CLASSIFICATION	9
PART III: CORRIDOR MANAGEMENT PLAN	11
INTRODUCTION	11
DESIGN GUIDELINES	11
<i>Typical Cross-section.....</i>	<i>12</i>
TRAFFIC MANAGEMENT GUIDELINES	13
<i>Median openings.....</i>	<i>13</i>
<i>Signal Spacing.....</i>	<i>16</i>
<i>Signal Spacing.....</i>	<i>17</i>
<i>Other Traffic Management Policies.....</i>	<i>17</i>
ACCESS MANAGEMENT.....	17
<i>Corner Clearance</i>	<i>18</i>
<i>Interim Access Conditions</i>	<i>20</i>
NON-MOTORIZED ACCOMMODATIONS	20
INTERSECTION DESIGN	21
<i>Median Refuge Islands.....</i>	<i>23</i>
<i>Slip Lanes.....</i>	<i>24</i>
TRANSIT ACCOMMODATIONS	26
<i>Park and Ride and Joint Development</i>	<i>26</i>
<i>Advantages for Transit Operations.....</i>	<i>26</i>
INTEGRATION OF LAND DEVELOPMENT WITH TRANSPORTATION	27
IMPLEMENTATION	31
SECURING BUY-IN.....	31
ADOPTION OF PLANNING GUIDANCE FOR THE CORRIDOR.....	31
LAND DEDICATION / PLATTING POLICY	31
CONSIDER ADOPTION OF A CORRIDOR MANAGEMENT ORDINANCE.....	33

INTRODUCTION

The initiation of discussions related to expansion of the Rochester Urban Service Area (RUSA) boundary westward into Kalmar Township has brought about a need to consider the long-term implications of this change to the metropolitan roadway system. A certain urgency accompanies this matter since development plans are moving through the plan review and approval process which will establish access points and right of way widths that need to be located to mesh with long term traffic management needs in the area.

From a thoroughfare system planning perspective 60th Ave should be considered for designation and development as an expressway if the RUSA is expanded. Connectivity of this corridor south to Highway 14 and north to CSAH 14, which provides a link to a future interchange on TH 52, are an important consideration, as is the spacing of this corridor midway between West Circle Drive (CSAH 22) two miles to the east and CSAH 3 two plus miles to the west. These factors have led ROCOG to identify 60th Ave as an important future corridor for connecting local area trips to the major thoroughfare system and as a key piece of the roadway system serving regional trips.

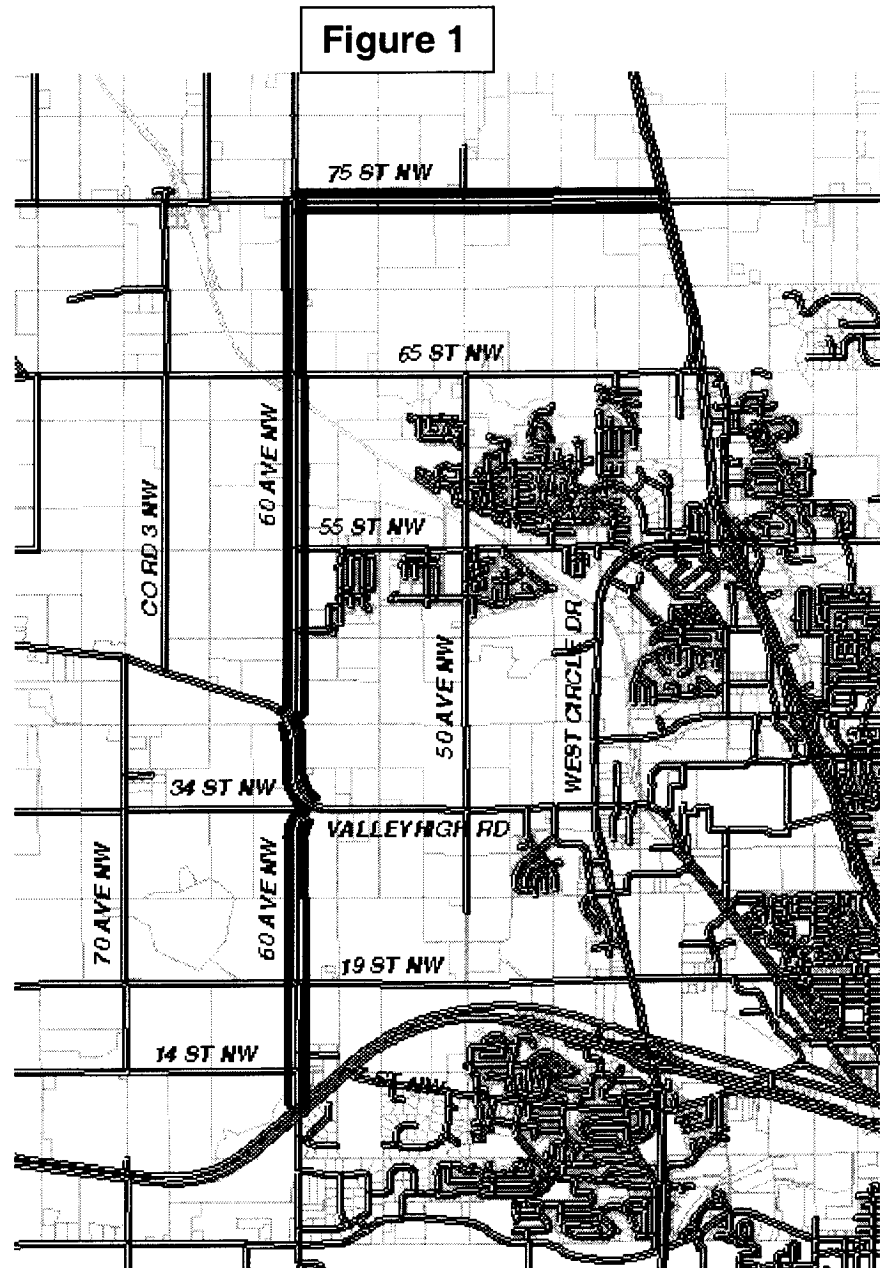
The corridor currently varies in width from 66' to 120', adequate to support a two-lane collector or minor arterial roadway, with some sections paved while others are gravel surfaced. As a tool to preserve the corridor for future upgrading, this corridor management plan will establish guidelines to direct future private and public sector development along the corridor, so that the risk of creating obstacles to future upgrading of the corridor through actions such as constructing buildings too close to the roadway, subdividing frontages into small lots that will demand direct access, or strip zoning corridor frontage for commercial development will be minimized.

Transportation and land use are interdependent and to be successful on both fronts requires coordinated solutions. This corridor management plan is one piece of the package needed to insure efficient and effective transportation system development for the future.

PART I: Project Background

Current Roadway

Jurisdiction of 60th Ave and CSAH 14 currently is shared between Olmsted County and the Townships of Kalmar and Cascade. South of CSAH 4 60th Ave is designated as County Road 104, while north of CSAH 4 to CSAH 14 it is a township road. The corridor is a rural roadway with open ditches for drainage and a 24-28 foot roadway surface. Volumes currently range from less than 1000 to 3000 ADT along the length of corridor, being near the high end just north of TH 14 and on CSAH 14, and at the low south of CSAH 14. Figure 1 highlights the corridor area that is the subject of this Corridor Management Plan



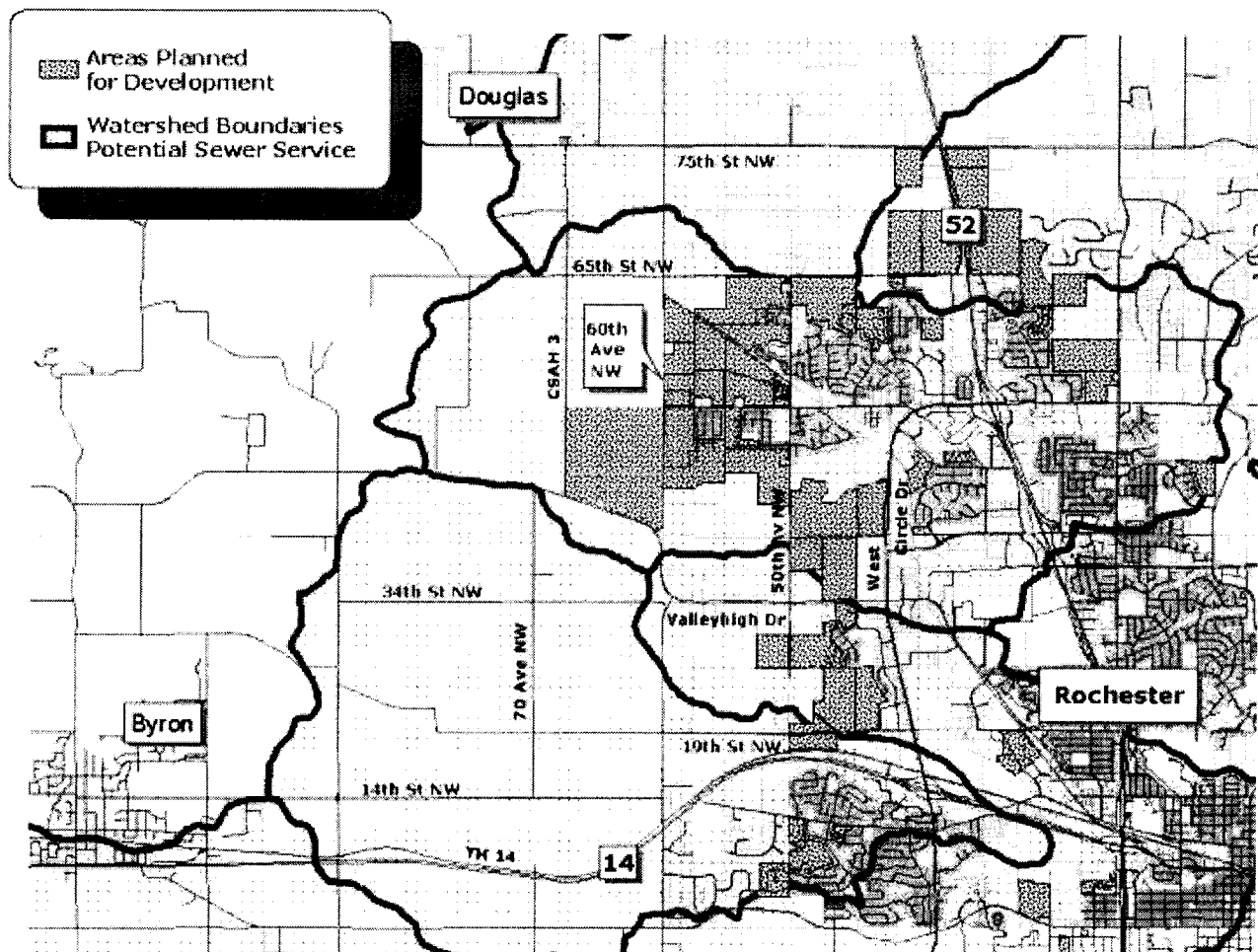
Current Land Use

Land use adjacent to the corridor is primarily rural but is changing with the extension of sewer and water to serve lands adjacent to the corridor. Sewer and water projects have been programmed by the City of Rochester to service various portions of this area in the near term and preparation of an Environmental Assessment Worksheet to evaluate longer-term sewer system expansion projects

is underway, which is a first step leading to the eventual construction of these services.

Sections of 60th Ave and CSAH 14 pass through five different watersheds, with sewer service to each area depending on extension or upsizing of different trunk sewer lines. Existing sewer and water facilities are adequate to support along sections of the 60th Ave corridor currently. Three private sector projects centered on the intersection of 60th Ave and 55th St are currently in the planning or development stages, including the Kingsbury development in the southeast quadrant, the Harvestview development in the northeast quadrant, and the Pebble Creek development in the southwest quadrant. Other developments underway that will contribute traffic include the Ridgeview development along 65th St NW. Figure 2 highlights the watershed and sewer districts that serve the area as well as the developments underway along the corridor.

Figure 2



Orderly Annexation and Growth Boundary

Prior to 2003 60th Ave defined the western boundary of the Rochester Urban Service Area. Spurred by development interests west of 60th Avenue, growth boundary and orderly annexation discussions between Kalmar Township and the City of Rochester were initiated for the purpose of agreeing on an expanded boundary west of 60th Ave. It is expected that the final boundary of the RUSA along with the final boundary of the Orderly Annexation agreement between Kalmar Township and the City of Rochester will be finalized in 2003.

Implications of proposed RUSA Changes

60th Avenue's role in the transportation system will change in the future due to the following factors:

- Traffic volumes will increase as a result of new development;
- The pattern of automobile trips generated by development along and west of the corridor will impact the TH 14 / 60th Ave intersection along with 65th St, 55th St, CSAH 4 and 19th St;
- Land development will create a need for safe non-motorized travel options that will likely include trails along the 60th Ave and CSAH 14 corridors and compact intersection designs to facilitate crossing of the corridor;
- Urban density development will lead to demand for transit services, which can be more successful if consideration is given to the development of transit amenities such as park and ride lots, signal pre-emption capabilities or queue jumper lanes along the corridor to facilitate express and local transit service.

The challenge for all parties will be how to manage the transformation of a rural roadway into a multi-modal urban corridor that responds to the mobility, access and land use needs of urban development. Among the potential issues that should be addressed include:

- Planning for the management of access to and traffic on the corridor;
- Planning for the reservation of adequate right of way for future needs;
- Planning for future non-motorized and transit needs;
- Development of a capital improvements program that will provide for the transition from a two lane rural collector to a 4 lane urban expressway over time;
- Securing funding to implement planned improvements;
- The development of a streetscape vision for the corridor.

Goals and Objectives of the Corridor Management Plan

In dealing with issues related to corridor planning and design, the onus rests primarily with the public sector. Roads are managed within the public realm and it is the role of the government agencies who own these corridors to ensure that they are planned, designed and built to reflect functional needs using appropriate design guidelines. At the same time, community development goals desirably should be reflected in the plans for the corridor. To achieve this, policies should be established that would guide the complementary development of the roadway facility and adjacent lands. The quality and design of both the roadway and adjacent development are important to the eventual image created by the corridor.

Envisioning the purpose of this corridor management plan to be the establishment of a policy vision for the corridor, the primary goals of the document are:

- To identify anticipated right-of-way needs as well as traffic and access management principles that will preserve the long term transportation function of the corridor;
- To preserve lands that will be needed for an array of future transportation improvements along the corridor including roadway expansion, multi-use trails, transit improvements and stormwater management;
- To identify land use guidelines for properties adjacent to the corridor which will support the transportation and public space function of the corridor and insure its compatibility with adjacent land uses;
- To identify means to implement the guidelines.

Corridor management and preservation is important because it helps to ensure that the ultimate transportation system can be developed while achieving the following benefits:

- Reducing property damage and the displacement of homes and businesses in the future;
- Minimizing future environmental, social and economic impacts of the corridor;
- Promoting the orderly development of transportation facilities concurrent with land development;
- Reducing the costs associated with developing the ultimate transportation facility;
- Planning for appropriate and compatible land use adjacent to the corridor.

PART II: SYSTEM PLANNING

System Development

The first step in planning a region's roadway system is to establish a street system that provides for a variety of functions including access and mobility. There is a need for a network of major streets that can accommodate high levels of traffic demand and provide high levels of mobility, and a supporting system of lower order streets to provide for high levels of land access. Proper spacing between classes of roads is necessary in order to create an efficient network. For example, if a network is created with too much spacing between arterial streets, motorists will use collectors and local streets for arterial type travel, which is typically higher speed and higher volume. With too little spacing between arterials there is increased demand to use these streets for access and other local street functions, creating potential traffic conflicts and disrupting the efficient flow of traffic on these facilities.

Table 1 highlights accepted system development principles and the desirability of having major arterials spaced every 2 to 3 miles in urban areas and 3-6 miles in suburban areas.

TABLE 1

	Major Arterials	Minor Arterials	Collectors	Local Streets
Urban Areas	2 to 3 Mile spacing	1/4 to 1/2 Mile spacing	1/8 to 1/2 Mile spacing	As Needed to access Land Uses
Suburban Areas	3 to 6 Mile spacing	1 to 2 Mile spacing	1/2 to 1 Mile spacing	As Needed to access Land Uses
Rural Areas	6 to 12 Mile spacing	4+ Mile spacing	As Needed to access Land Uses	As Needed to access Land Uses

60th Ave and CSAH 14 between TH 14 and TH 52, due to their spacing relationship to other major roads such as West Circle Drive, their location within future planned urban growth areas, the expected traffic volumes the corridors will carry as urban development occurs, and the connectivity the corridor provides to TH 14 and TH 52, creates a logical corridor for designation as a future Major Arterial. Projected volumes on the corridor are on the order of 25,000 vehicles per day by the Year 2030, with interchange access being provide both the TH 14 / County Road 104 intersection and the CSAH 14/TH 52 intersection.

Thoroughfare Plan

The Rochester-Olmsted Council of Governments formalizes the principles of system development in the **ROCOG Long Range Thoroughfare Plan**.

In this plan Major Arterials are typically designated as either a Freeway or Expressway type of facility. Freeway design is typically reserved for corridors serving major inter-regional travel needs or intra-regional corridors where projected volumes exceed 45,000 vehicles per day. For planning purposes, the 60th Ave / CSAH 14 corridor has been designated as an Expressway, given its anticipated role as more of an intra-regional corridor with volumes projected below 45,000.

FIGURE 3

ROCOG LONG RANGE THOROUGHFARE PLAN August 2003

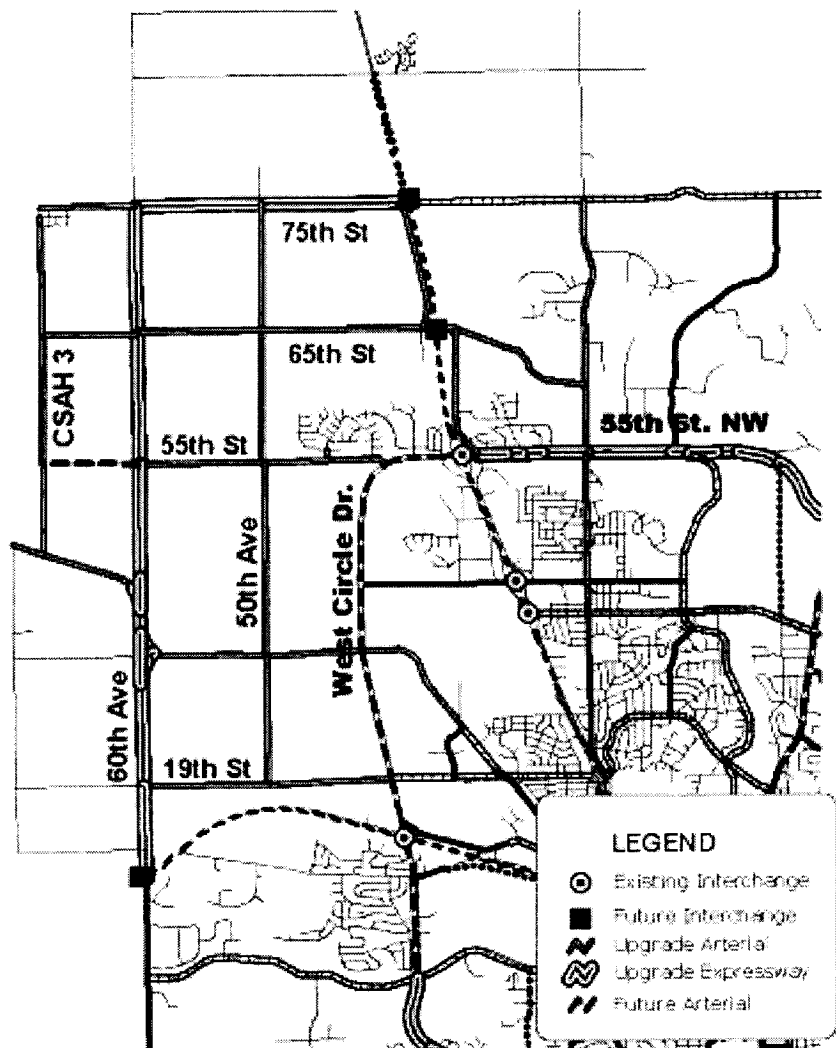


Figure 3 illustrates the Long Range Thoroughfare Plan for the corridor area. It highlights the expressway designation on 60th Ave and CSAH 14 and a series of intersecting arterial streets that will need to be developed over time to serve the area. The expressway design emphasizes limited access with higher order design and operating speeds. Part III of this report will detail the specific expectations to be applied to this corridor relative to design, access and traffic management, and adjacent land use.

The arterial corridors shown on Figure 3 reflect the existing grid of township and county roads, which, consistent with the system development principles

discussed on the previous page, will need to be upgraded over time to serve the area. One new corridor that currently is not utilized for roadway purposes is the extension of 55th St west of 60th Ave, which is recommended for development.

The Thoroughfare Plan does not at this time illustrate the location or spacing of collector streets within development areas adjacent to the corridor. However, it is important to recognize that a system of collector streets is needed to consolidate local access traffic and channel it to the limited locations along the 60th Ave expressway where access will be provided, and to the arterial street system. In Part III a policy on Collector Street development is proposed to insure that an adequate level of collector street capacity is provided to serve each block of development area created by the arterial / expressway grid.

Functional classification

In addition to the ROCOG Thoroughfare Plan there is a supplementary system of roadway classification known as Federal Functional Classification which plays a role in the programming of state and federal funds for transportation improvements. Generally the process of allocating state and/or federal funds for local area roadways takes into account the functional classification of roadways, with the policy being to target funds towards higher-level facilities.

The process associated with establishing roadway classification under the Functional Classification system includes not only local parties but MNDOT and the Federal Highway Administration as well. Requests for designation must be approved at all these levels, with the process in effect providing a system of checks and balances in order to maintain a reasonable level of major street designations. The general categories of urban roadways under the Functional Classification system are Principal Arterials, Minor Arterials and Urban Collectors.

The 60th Ave corridor is currently designated as a collector south of Valleyhigh Drive and as a local street to the north. The eventual designation is anticipated to be as a Principal Arterial. A series of intervening steps are envisioned which would include:

- Interim classification north of Valleyhigh Drive to 65th St as an urban collector or possibly minor arterial (depending on classification of 65th St)
- Interim classification of the corridor south of Valleyhigh Drive to TH 14 as a Minor Arterial.
- Interim classification of the corridor north 65th St to an urban collector once urban sewer and water services are made available to serve that area;
- Permanent classification to a Principal Arterial once all lands along the corridor have sewer and water services available.

PART III: CORRIDOR MANAGEMENT PLAN

Introduction

This section of the report presents the policies and principles that have been formulated to address future design and traffic management of the 60th Ave Expressway corridor along with principles to help direct the planning of future development on lands adjacent to the corridor.

The principles and policies are broken into six sections, dealing with the following topics:

1. Design Guidance
2. Traffic Management Guidance
3. Intersection Design
4. Accommodation of Future Non-Motorized Travel
5. Accommodation of future transit service
6. Land Use

Design Guidelines

The Design Guidelines that have been developed address the fundamental criteria that will shape the future layout of the expressway corridor. These criteria will be important in the interim period before construction of the expressway facility to define the grade and layout of intersecting streets and lots adjacent to the corridor.

Design Policy #1: Design Speed -The desired design speed for use in laying out the ultimate expressway facility will be 55 MPH. This value should be used to establish vertical curvature along any section of the corridor, to evaluate sight distance, and in the designing the approach grades of intersecting streets and adjacent lots. It is expected that actual travel operations will be 40-45 MPH

Design Policy #2: Design Standards - In general, County State Aid Standards would be followed for lane widths, horizontal and vertical curvature, grades and shoulder widths.

Design Policy #3: Median Type - Throughout the corridor the predominant median design would be a depressed median with median crossovers limited to one every ¼ mile. On approaches to major intersections a compressed intersection design with raised medians will be considered to facilitate turn lanes and pedestrian crossing and to create refuge areas for pedestrians and cyclists. (see discussion on intersection design)

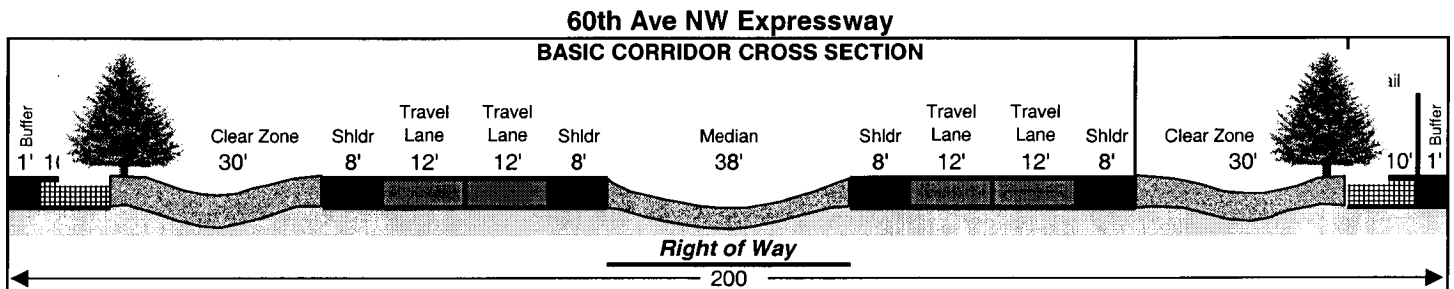
Design Policy #4: Typical Cross Section Design – The basic design for the corridor will incorporate open ditches on the outside of the travel lanes and a grassed, depressed median to separate the travel lanes. Exceptions to this would be considered at future signalized intersections where pedestrian and bicycle crossing is encouraged.

Design Policy #5: Site Grading - Owners or developers who, through a proposed development, site expansion or change of use are initiating grading activity on a property, will be required to grade the site to match the proposed centerline profile and cross section for 60th Ave based on the ultimate cross section for the corridor. Intersecting roadways and properties need to be graded to match proposed elevations and grades for the 60th Ave corridor. The City of Rochester and Olmsted County will cooperate on development of a preliminary centerline profile of the corridor to provide this information to affected property interests.

Typical Cross-section

Figure 4 illustrates the typical cross section anticipated for the road corridor. Right of way for the corridor is expected to be a minimum of 200 feet in width.

Figure 4



Traffic Management Guidelines

The intent of the traffic management guidelines is to provide a balance between access for land development and the preservation of safety, capacity, and speed of travel on the corridor. The proliferation of driveways and intersections along a given section of roadway reduces the average speed of travel, increases the number and severity of accidents, reduces the capacity of the corridor and inhibits bicycle and pedestrian usage. Poor design and haphazard location of intersections and driveways can create congestion and a negative image for commercial districts served by such access locations.

Proper intersection location and spacing are critical to achieving the desired level of mobility intended by the expressway corridor concept. Since land development will precede development of the expressway, it is important to apply traffic management principles to decisions about access locations at the time of development to insure the operation of a future expressway is not compromised by access and internal street system decisions made now. Three design elements are key to an effective traffic management program – the spacing and design of median openings, the location and spacing of other access, and traffic signal spacing. The following sections summarize the principles of this corridor management plan in regards to these issues:

Median openings

The first consideration in development of a traffic management plan is the designation of median openings. The spacing and frequency of median openings will impact traffic mobility and safety. As the desired level of traffic mobility rises, it is necessary to limit the number of median openings and channel turning movements to locations where they can be efficiently handled.

The recommended policy on the spacing of future full median openings when the corridor is upgraded to an expressway is:

- **Traffic Management Policy #1: Full median openings should be spaced ½ mile apart to facilitate the installation of a future signal system that can be managed in a progressive fashion to achieve average travel speeds of 40-45 mph.**

Figure 5 on the next page identifies these locations. Site planning for adjacent property should respect these locations and plan to provide internal collector streets that connect to these locations. Signal spacing of 1/2 mile is optimum to achieve two-way balanced traffic flow progression in either direction of travel. Slight deviations from this spacing (+/- 150 feet maximum) will be considered to

accommodate major difficulties in approach grades that would occur if the location were held strictly to the ½ mile location.

The existing backbone of intersecting street corridors was used as a starting point for defining the ½ mile locations, beginning at 14th St NW and moving northward.

All existing roads except the west leg of CSAH 4 are located at either ½ or 1-mile locations from 14th St NW. These roads will serve as the primary supporting arterial street system to the 60th Ave Expressway. Additional ½ mile locations can be utilized as focal points for land development access along the corridor. It is recommended that realignment work be considered at three locations identified as Areas A, B and C in Figure 5.

Area A involves the redesign of the CSAH 14 and 60th Ave intersection to facilitate the priority to be given to the expressway in the future. Area B

highlights the need for realignment of the west leg of CSAH 4 to better match the spacing criteria of this policy and to eliminate a skewed intersection if the current location was maintained. Area C highlights the need to consider realignment of 14th St NW to match existing streets on the east side of the corridor in the area just north of TH 14.

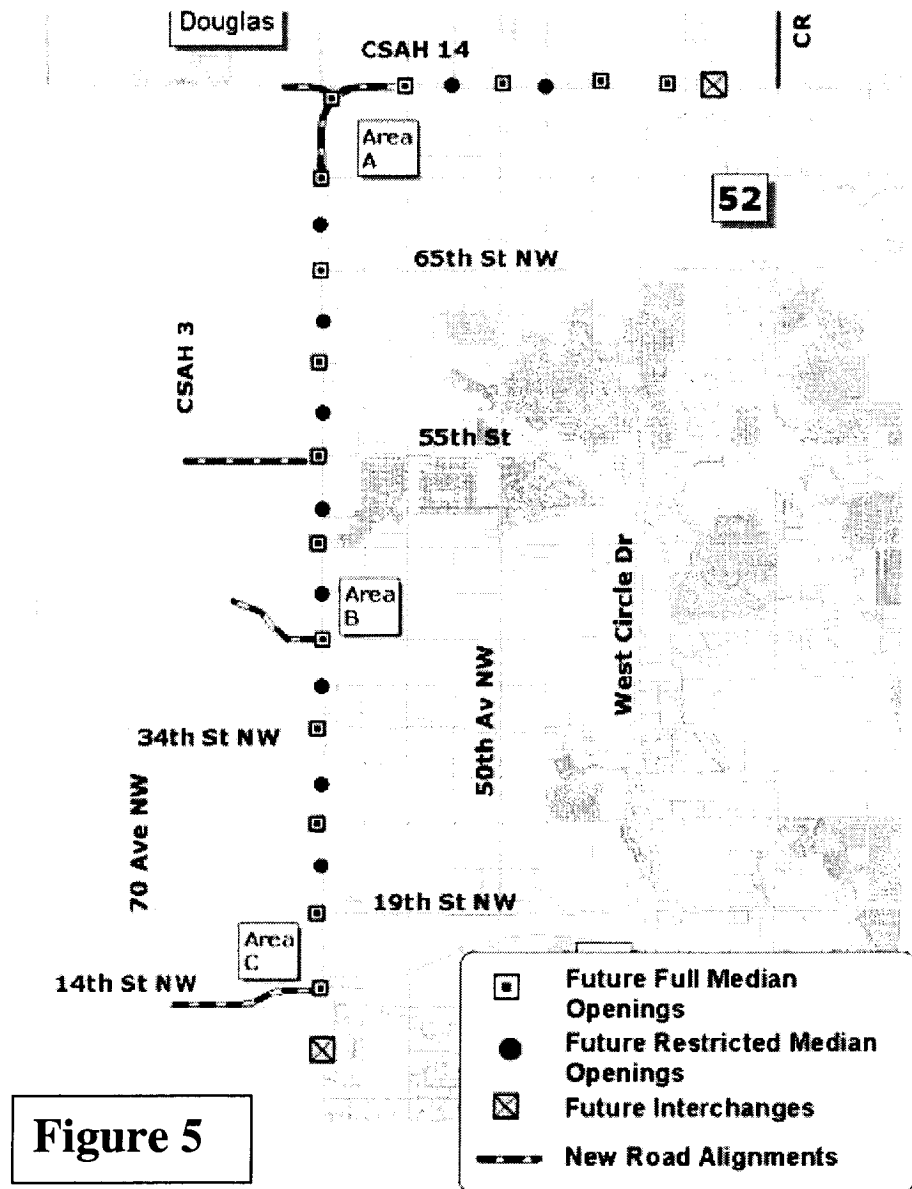


Figure 5

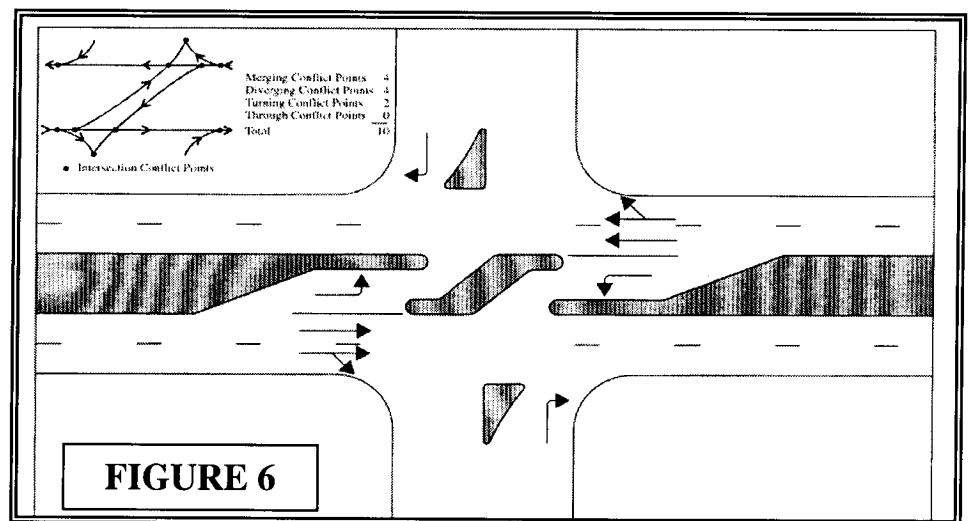
Decisions regarding the timing of traffic signal installation at these primary access locations will be governed, as is the case with all signal installations, by consideration of whether the location meets the warrants for a traffic signal as established under the Minnesota Manual on Uniform Traffic Control. This evaluation will take into account not only existing traffic volumes but near term growth in traffic resulting from the imminent development of properties adjacent to the corridor that may impact the location being evaluated.

Secondary access locations midway between each $\frac{1}{2}$ mile location will be permitted to facilitate local land access. The intent at these locations is to manage the restrict the level of median access provided as necessary to allow these locations to operate safely as unsignalized intersections. The following policies are established relative to secondary access locations:

- **Traffic Management Policy #2: Secondary access will be permitted at the $\frac{1}{4}$ mile locations located midway between each full median opening. These locations will be managed to always operate as unsignalized intersections, with progressive limitations applied to turning movements if safety or congestion problems develop. The progression of access limitation will be as follows:**

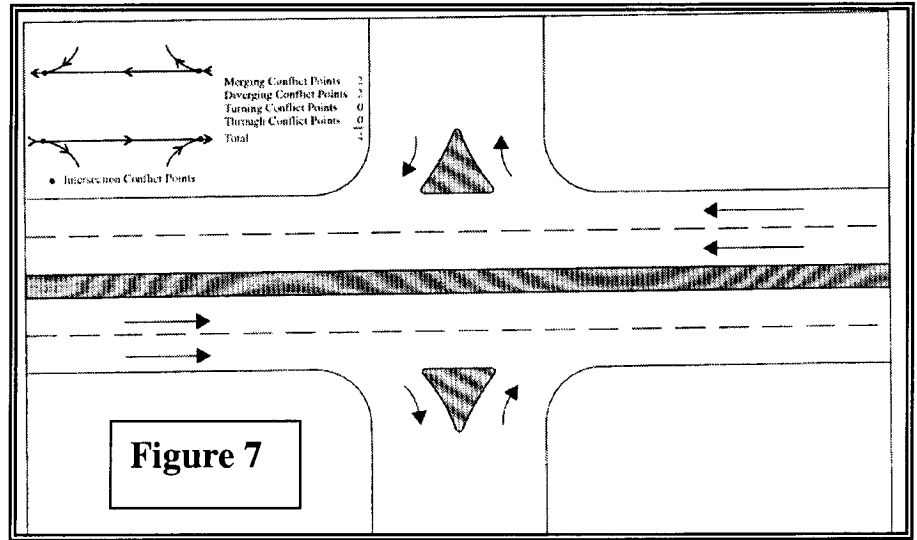
1. These intersections will initially be constructed as full openings with no limitations on turning movements

2. If there are demonstrated safety problems at the intersection or unacceptable traffic operations develop (defined as the Level of Service (LOS) for approach traffic on intersecting streets dropping below a LOS D or total peak hour delay exceeding 4 vehicle hours of delay¹, left turn traffic will be controlled through use of $\frac{3}{4}$ access design as illustrated in Figure 6.



¹ Recommended standards for unacceptable traffic operations are based on information in NCHRP Report 457, Evaluating Intersection Improvements: An Engineering Study Guide, Transportation Research Board, pp 38-39.

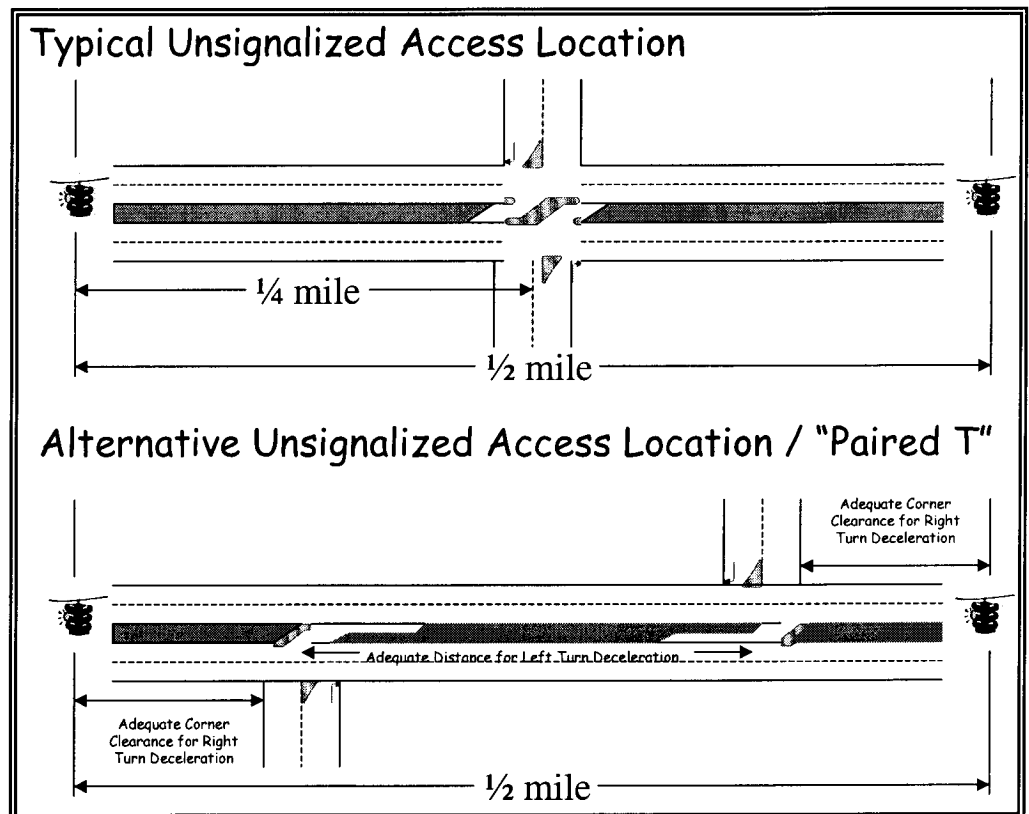
3. If the $\frac{3}{4}$ access design does not solve crash and congestion problems the next level of access control would be to convert the intersection into Right In / Right-Out operation only, as illustrated in Figure 7 .



4. Alternatives to locating access at the $\frac{1}{4}$ mile locations will be considered if the proposal utilizes offset T-intersections to provide service to properties on each side of the corridor. Such alternative access will be reviewed to insure acceleration and deceleration standards are met and overlapping traffic conflict zones are not created. Figure 7A illustrates an alternative access layout.

It will be important as land development plans are prepared to insure that an interconnected local street system plan is developed that will focus access for left turning traffic onto the expressway at the full median openings or via intersecting arterials streets where signalization with the expressway will be provided.

Figure 7A



Signal Spacing

Traffic Management Policy #3: The pattern of full median openings that is being established will facilitate ultimate consideration of signals every ½ mile along the corridor measured north from 14th St NW. Traffic at all other locations will be managed with the intention that traffic signals will not be used at any other location.

Other Traffic Management Policies

Traffic Management Policy #4: Turn Lanes – Left and Right turn lanes will be provided at all access locations along the corridor.

Traffic Management Policy #5: Parking - No on-street parking will be provided or planned for along 60th Ave / CSAH 14 on an interim basis or after construction of the ultimate expressway

Traffic Management Policy #6: Interim Turn Lanes - Prior to construction of the expressway facility turn lanes and bypass lanes will be required at all access locations

Access Management

As discussed in the previous section access to 60th Ave / CSAH 14 ultimately will be limited based on planned locations of future median openings. These locations should be used to establish the structure of the interior circulation network in developments adjacent to the corridor, with interior collector streets planned for connection to 60th Ave at future full median opening locations. Because of the importance of these locations, they should be preserved for use as intersections for future public streets. This leads to the following policy guideline:

Access Management Policy #1: Access to the ultimate expressway will be limited to public street intersections only and will be spaced to facilitate the traffic management goals of this plan. Internal road systems including frontage or backage roads as necessary shall be developed that will direct traffic to the future signalized intersection locations planned to be located at ½ spacing locations along the corridor.

In addition to the ½ and ¼ mile access locations, additional limited access could be accommodated within the corridor if properly located relative to the main access intersections. These locations will be limited to right turns from 60th Ave onto local streets as stated in the following policy:

Access Management Policy #2: "Right turn in" access (traffic turning off of the corridor) can be considered at less than ¼ mile spacing under the ultimate corridor development conditions. Access to neighborhood centers or other uses located in the quadrants of intersections should be designed, however, to focus development access on the lower order public cross streets that will intersect 60th Ave to serve the development.

As Figure 8 illustrates a zone exists where access can be accommodated at spacing of less than ¼ mile. While right turns onto the corridor are problematic (due to the distance needed to accelerate to a desired travel speed of 45 mph which causes the acceleration movement to encroach upon the functional area of the next downtown intersection) the distance for right turn deceleration from 45 mph speed is less and can be accommodated within the distance provided between ¼ mile access openings.

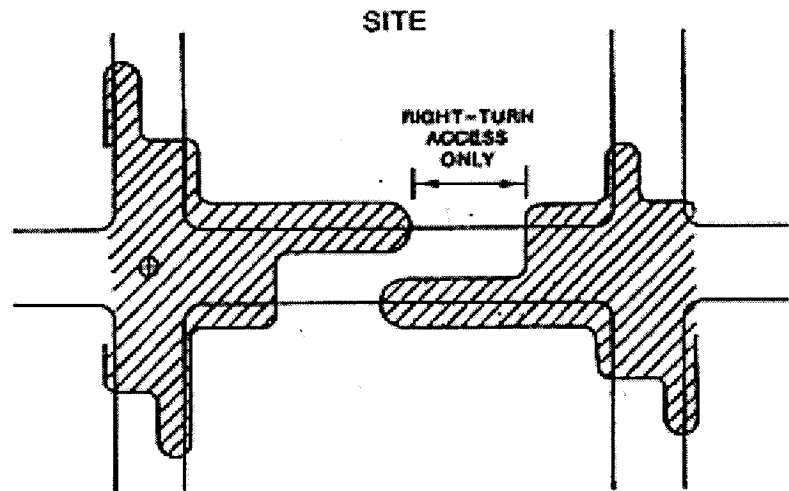


Figure 8: Condition where Right Turn Access Could be Permitted

Corner Clearance

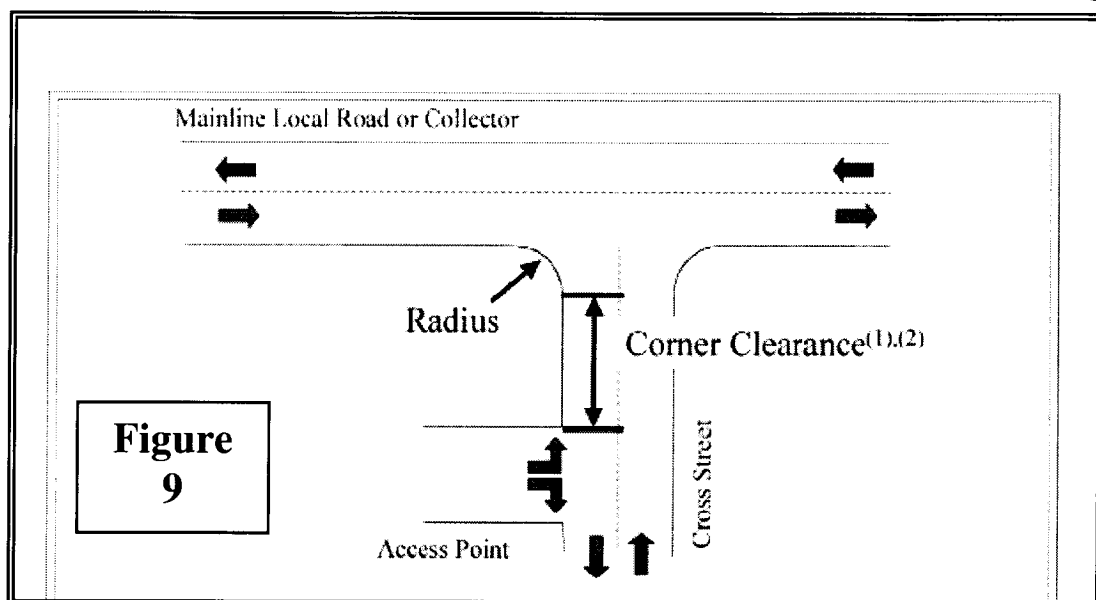
Access to lots adjacent to intersections pose special challenges. Potentially high volumes of turning traffic, highly variable travel speeds in the vicinity of the intersection, merging traffic and pedestrians often lead to increased congestion and a higher accident rate at these locations. However, because of the visibility of these lots, corner locations are often smaller in size and highly sought after by businesses that depend on high volumes of drop-in customers.

Corner clearance is the minimum distance measured between the end of the intersection corner radius and the nearest edge of a driveway or other access point on the cross street, as illustrated in Figure 9. Adequate corner clearance decreases the likelihood for crashes and minimizes interruptions to the flow of traffic by separating conflict areas. Inadequate clearance creates additional conflicts near the intersection.

To balance the need for public safety with the need for access at these locations, it is preferable that minimum corner clearance setbacks at intersections along 60th Ave be maintained.

Access Management Policy #3: All corner lots should take access via internal local roads. Minimum corner clearances should

maintained consistent with the following guidelines:



Arterial Cross Streets:

- 480 feet where left turn lanes are not required on an arterial cross street
- 660 feet where left turn lanes are required on the arterial cross street

Collector Cross Streets:

- 250 feet where left turn lanes are not required on a collector cross street
- 480 feet where turn lanes are required on a collector cross street

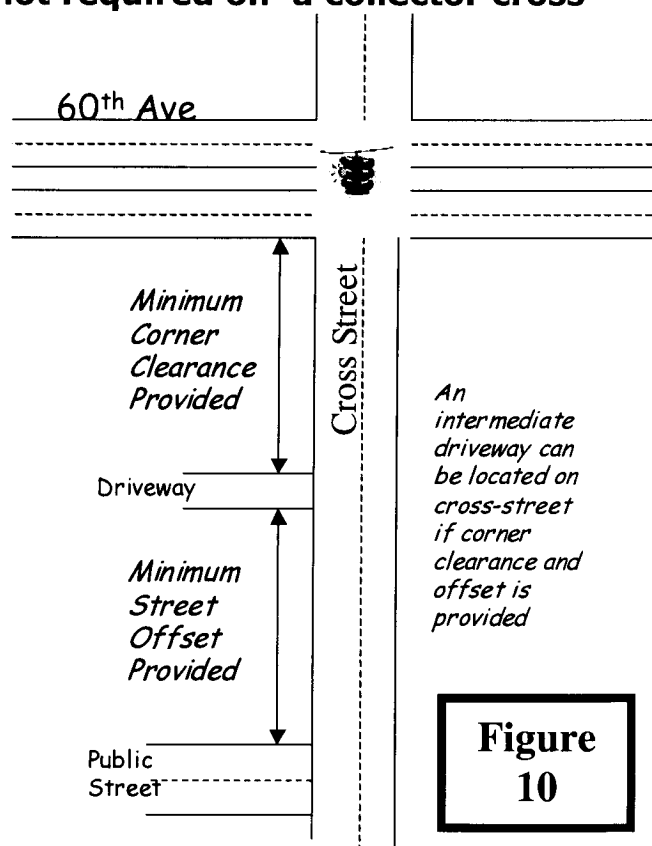
Local Non-Residential Streets:

- 250 feet

Local Residential Streets:

- 125 feet

If the first public street intersections on the cross street are located at a greater distance than the minimum required corner clearance, restricted access driveways can be considered at the minimum corner clearance distance if the resultant spacing between the driveway and the street intersecting the cross street meet minimum street offset requirements found in the Land Development Manual, as illustrated in Figure 10.



Interim Access Conditions

Access needs will change over time as land use changes and the roadway corridor is improved to accommodate new traffic and land use patterns. Driveways serving existing uses with limited traffic exist along the corridor and will need to be retained to provide service for these properties prior to expressway construction. However, if land use changes the location and function of existing driveways should be assessed to determine their compatibility with future corridor improvements, and accommodations made to provide for future compliance with long-term access management goals.

Access Management Policy #4: On an interim basis existing driveways will be permitted to remain in use until such time as a change in use or development is proposed, at which time the policies of this plan will be applied.

Access Management Policy #5: Future access for "Exception Parcels"² that will replace existing direct access to the 60th Ave corridor with access to the future internal street system of a planned development shall be identified as part of the general development or site planning process for any property along the 60th Ave Expressway Corridor

Access Management Policy #6: Parcels with existing access should not be permitted to create additional access locations unless such access location is consistent with the Access and Traffic Management policies of this Corridor Management Plan.

The goal of these policies is to allow for the retention of existing residential or field access to serve existing uses during the interim period prior to upgrading of the corridor to an interim arterial or ultimate expressway. Changes in land use shall trigger application of the access and traffic management policies to the new use.

Non-Motorized Accommodations

A significant amount of future residential development is expected in the area adjacent to the corridor, with public facilities such as parks and schools eventually developed to serve the area. In order to serve the future residential population of the area, the corridor should be developed reflecting the following principles:

² The term "Exception Parcels" refers to the situation where accommodations are being made at the time of general development planning or platting to accommodate homesteads or other pre-existing land uses that are not being fully integrated into a new development layout.

Non-Motorized Policy #1: Detached paths should be planned for and constructed on each side of the corridor. Crossing of the corridor by pedestrians and bicyclists should be encouraged to occur at signalized intersections. Intersections should be designed with features that will facilitate movement across the corridor, as discussed in the following section on Intersection Design.

Non-Motorized Policy #2: Shoulders of adequate width should be provided if the corridor design is upgraded to provide service for highly skilled cyclists who can manage travel on the roadway itself.

Intersection design

Road intersections include a combination of traffic lanes, cycling lanes, turning lanes, and crosswalks. In the 60th Ave/CSAH 14 corridor there will be a mix of signalized and unsignalized intersections. Signalized intersection locations will be the focus of higher levels of local access traffic, as these locations will likely handle the majority of left turning traffic onto to the corridor. Due to anticipated higher speed through traffic on the mainline, the use of right turn deceleration and acceleration lanes will also need to be considered at unsignalized intersections to permit turning traffic to merge into the mainline traffic stream.

The combination of higher travel speeds and a wide right of way create challenges in handling the crossing of pedestrians and bicyclists. This is a concern due to factors such as the proposed construction of an elementary school facility in the Harvestview development, which will place the children of many households west of 60th within the walking boundary of the proposed school. In addition, the eventual construction of neighborhood or village centers at arterial cross streets as has been proposed in initial developments along the corridor is likely to generate further demand for pedestrians to cross the corridor.

To facilitate the ability of pedestrians and bicyclists to safely cross the corridor, the following intersection policies should be considered in the design of signalized intersections along the 60th Ave Expressway corridor:

Intersection Design Policy #1: There should be an effort to make the intersections along the corridor as compact as possible. This can be accomplished through a number of features that should be considered by designers of the ultimate expressway. These features include:

- **Consider using the minimum acceptable turn lane and through lane widths given the design speed of the corridor;**

- **Incorporate median refuge areas into the design at intersections (see discussion below). Where right-turn deceleration lanes and double left-turn lanes are needed consider the use of multiple median refuge areas to break the length of crossing into manageable distances for pedestrians,**
- **Use the smallest practical curb radii for the predominant vehicle mix to reduce vehicle speeds and minimize pedestrian crossing distances.**
- **Free-flow vehicle turning movements at intersections should be managed or controlled to enhance the safety of pedestrians.**
- **Make use of an urban cross section on approaches to signalized intersections to reduce crossing widths.**

The following Figure 9 illustrates the potential cross section design that would be considered at signalized intersections.

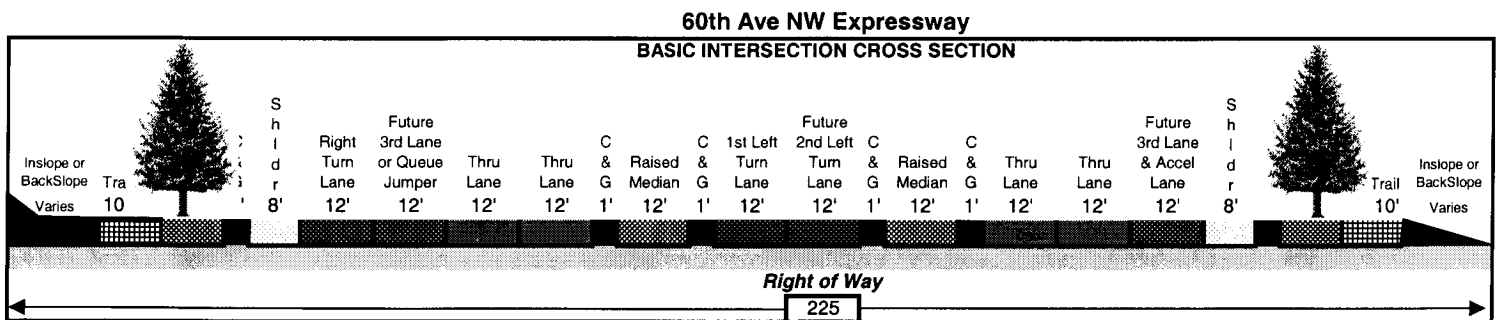


Figure 11

The following sections discuss in further detail the use of median refuge islands and slip ramps at signalized intersections.

Median Refuge Islands

Medians or center refuge islands at intersections provide a waiting area for pedestrians and eliminate the need for pedestrians to cross both directions of traffic all at once. Medians and center refuge islands can be created at intersections to help define the pedestrian walking space and provide protection and refuge from motor vehicles. This is particularly important on wide, higher speed roadways such as are envisioned for the 60th Ave expressway. Studies found that streets with raised medians, in both central business districts and suburban areas, have lower pedestrian crash rates compared to streets with a painted two-way left-turn lane or undivided streets.

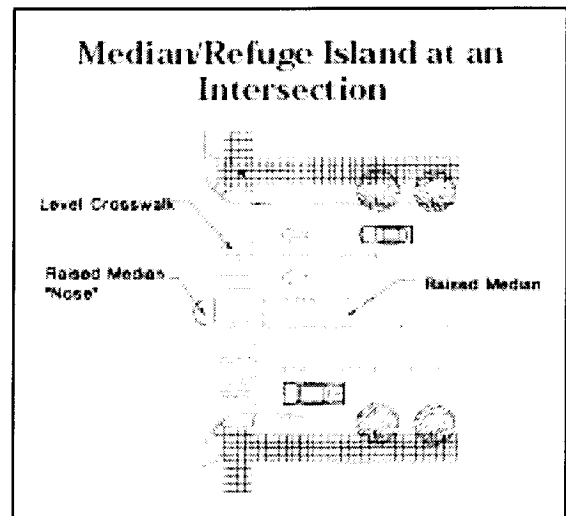


Figure 12

Other design considerations that can be considered that will benefit pedestrians and bicyclists include:

- Trees in medians or on the boulevard can help to narrow the long range field of vision for approaching drivers, causing them to slow down as they near the intersection

Landscaping in median refuge

islands must be handled carefully, however, so as not to block the sight lines of pedestrians and motorists at the crossing area.

- Medians and refuge islands should be illuminated for safer nighttime crossing.

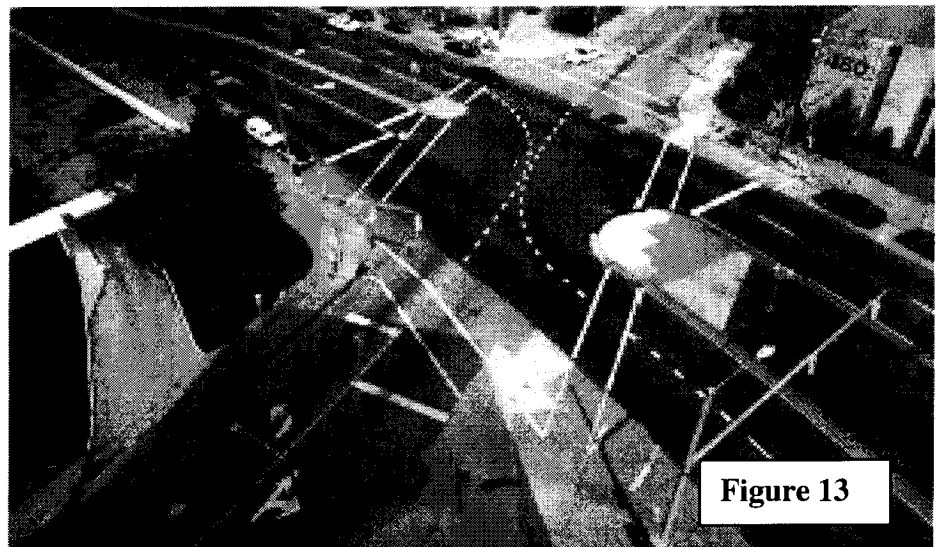


Figure 13

Pedestrian refuge islands can create a safer crossing for wide streets.

Slip Lanes

A consideration in the design of major intersections is the use of right-turn channelization lanes with refuge islands ("Slip Lanes" as they are also known). They are typically provided to allow right-turning motor vehicles to proceed with or without stopping, generally at a higher speed than if they had to make a 90-degree right turn.

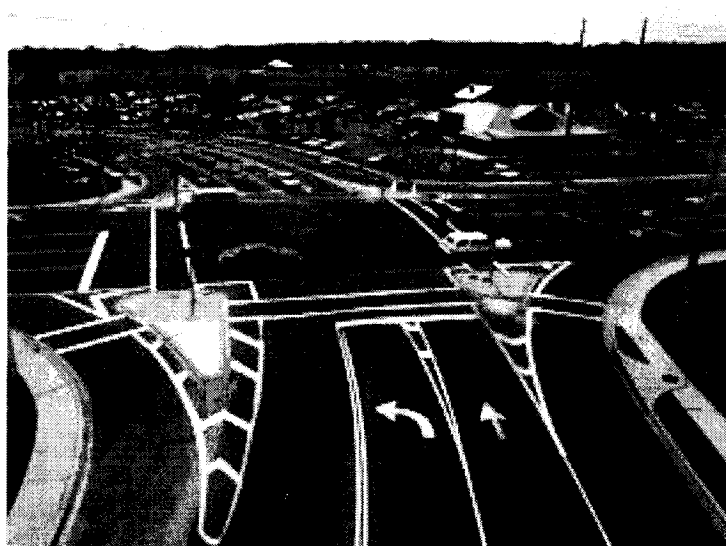
Care should be taken if slip lanes are utilized to include features that will facilitate pedestrian crossing at these locations. Slip ramp designs that optimize the right-turning motorist's view of the pedestrian and of vehicles to their left should be considered, as described in Figures

14 and 15. Corner islands, lane width, and curb radii can be used to discourage high-speed turns while still accommodating large trucks and buses. The triangular "pork chop" corner island that results should have a longer "tail" pointing to approaching traffic. Using the corner island as a pedestrian refuge provides benefit to vehicular traffic as well since the traffic signal phasing can be based on a shorter crossing distance. This recommended design with a longer tail has the additional advantage for the pedestrian in that the crosswalk is located in an area where the driver is still looking ahead. Designs that place the crosswalk too close to the cross street that the motorist is entering result in a situation where the driver is already looking left for a break in the traffic and not paying attention to pedestrian traffic.

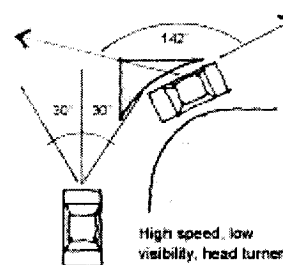
The triangular space between the through-lane and the slip should be constructed with a raised island to provide pedestrians a refuge area when crossing. The use of a raised median island provides a vertical barrier and added protection between vehicles and pedestrians.

Consideration should also be given to operating the right

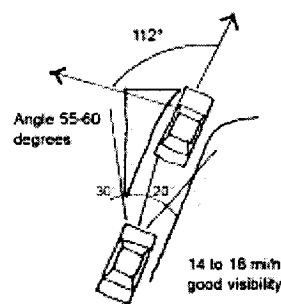
Figure 14



A slip lane designed at the proper angle, as shown on the right side of intersection, provides the driver with greater visibility of pedestrians. The lane on the left creates a higher speed, lower visibility right turn.



Current AASHTO Standard



Recommended Design
14 to 16 mph = 1.61 km/h

Sketches by Michael Kneiberg

Figure 15

turn under traffic signal control to provide improved safety for pedestrians through better speed control. This type of application is used in other states and localities and should be considered as a pedestrian friendly corridor feature.



Figure 16

Transit Accommodations

The expectation for the corridor relative to transit is that it will be used for express routes and local circulation as needed. The development of pick-up or drop off locations on the corridor itself can be accommodated if designed properly so as to be integrated with the traffic operations and not in conflict with the acceleration, deceleration, weaving or merging movements in the vicinity of planned intersections.

Park and Ride and Joint Development

Transit Policy #1: To encourage the use of transit, the development plans for lands along the 60th Ave corridor should consider incorporation of areas for future park and ride development at selected locations along the corridor.

Park and Ride facilities preferably should be developed as part of a joint use development and not as a free- standing facility. Incentives for landowners, such as fee reductions or credits towards development fee charges, should be considered in an effort to encourage joint use development.

Key locations that should be considered for development of park and ride facilities include the intersection of 60th Ave with the following major crossroads:

- 60th Ave and 14th St NW (due to its proximity to TH 14)
- 60th Ave and CSAH 4 (given the regional arterial function of CSAH 4)
- 60th Ave and 65th St (given the potential for access to TH 52 at 65th St)

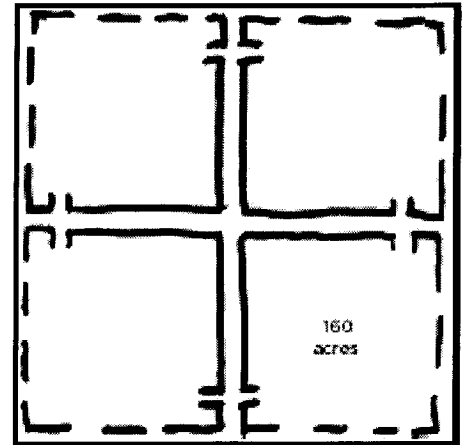
Advantages for Transit Operations

Transit Policy #2: Consideration should be given in the design of the corridor and future signalized intersections to provide design features that will enable transit services to operate more efficiently. Signal priority, provision of bus-only on-ramps to permit entry onto the corridor while bypassing signals (such as from a park a ride location) and queue-jumper lanes should be considered in the design of the corridor.

Integration of Land Development with Transportation

Land uses adjacent to regional roads contribute to, and greatly influence, the character of the road and its function. The densities, orientation, quality of buildings and on-site landscaping determine the character and function of the road corridor. Design components such as street pattern, building setbacks, building density and land use mixes have an influence on road corridors. As lands are planned for development there is a need to consider the following elements:

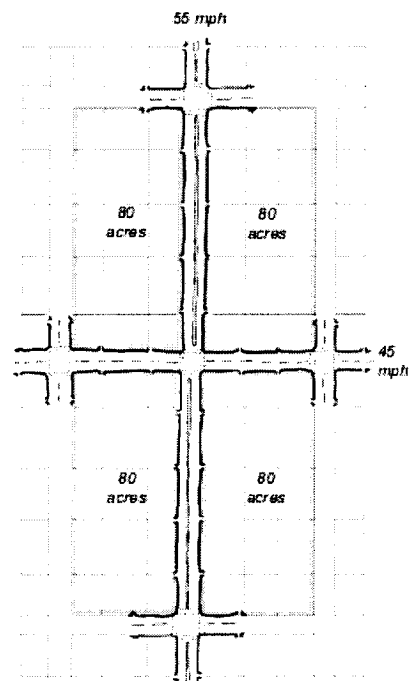
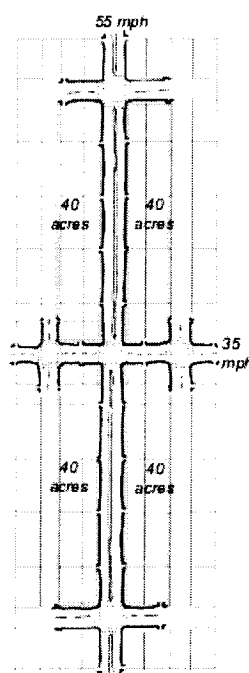
Land Use Policy #1: Land development planning adjacent to the corridor should consider blocks of land. The desirable minimum block of land that should be considered would be 160 acres (or an area ½ mile by ½ mile) since the spacing of full access envisioned for the corridor is ½ mile



Planning Area
Square planning areas approximately 160

Land Use Policy #2: Land development planning needs to provide a supportive local and collector street system. Each one-mile square section of land should have at least one east-west collector road that will tie into future signalized median opening locations. Secondary collector or major local streets should be designed to connect to the corridor at the future ¼ mile unsignalized access locations being planned.

Land Use Policy #3: The design of interior areas should recognize the limited access along 60th Ave and should orient blocks and streets in a manner that complements the planned spacing of intersections.



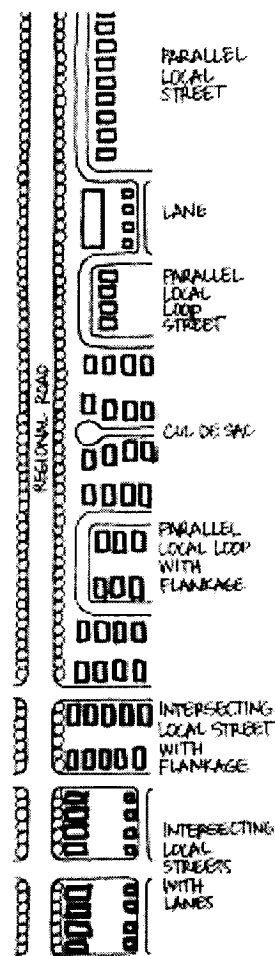
Land Use Policy #4: To ensure that regional road corridors will act as community “integrators” rather than “dividers”, have land uses and built form relate to the road and avoid back-lotting (reverse frontage). Consider street and lot layouts for adjacent lands, which utilize parallel streets or lot patterns featuring side-lotting or front-lotting and avoid the backlotting of properties.

Land Use Policy #5: Provide frequent pedestrian connections from adjacent lands to the trail facilities along the corridor by including direct pedestrian connections every 1/8th mile at a minimum.

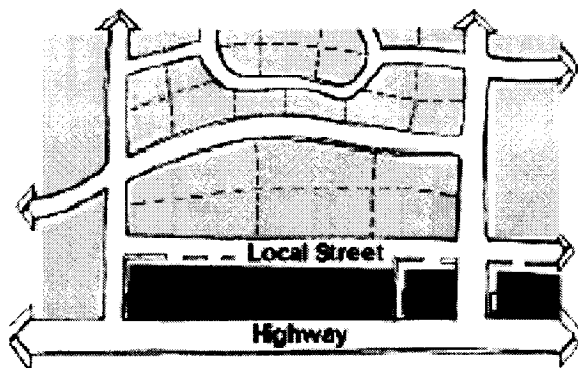
Land Use Policy # 6: Development immediately adjacent to the 60th Ave corridor should be required to provide to the public a noise mitigation easement that will hold harmless the public from any future claim to the need for noise mitigation.

Developers are encouraged to consider design features such as the installation of landscaped berms, greater distance separation or construction features such as sound insulation to provide for mitigation against future traffic noise.

Land Use Policy #7: Subdivisions adjacent to 60th Ave shall be designed with inter-connected local streets, so that residents do not have to use the expressway for local trips. Residents should have convenient options for traveling from one neighborhood to another and to nearby businesses that serve their daily household needs without the need to make part of their trip on 60th Ave.



There are many options for subdivision and site plan design to avoid reverse frontage along regional road corridors.



Land Use Policy #8: The treatment of parking areas is a key influence on the visual character of a regional road corridor. Locate parking lots to the side or rear of buildings to mitigate their visual impact on the streetscape, to minimize the need for landscape screening, and to permit buildings to be located closer to the road. Screen parking lots that abut the corridor. Low-level screening can mitigate views of parked cars while providing a sense of personal security for parking lot users.

Land Use Policy #9: Signs are an important aspect of commercial activity and can influence the visual character of a road. Use of ground-mounted and wall-mounted signs in scale with adjacent buildings and land uses to avoid a cluttered streetscape should be encouraged. Shared-use or joint signs should be encouraged to reduce sign clutter. Prohibit signs with flashing, animated, pulsating, rotating, or otherwise moving components, so that road users are not distracted, and apply the same restrictions on advertising signs along the 60th Ave corridor as currently applied to TH 52 and CSAH 22 (Circle Drive)

Implementation

Securing Buy-in

The success of this Corridor Management Plan to guide the long-term development of the corridor will depend on whether the policies are understood and embraced by the intended users. Its value will not be fully realized unless it is applied in projects. The following initiatives can help ensure success:

- Distribution of the document to municipal staff, elected and appointed officials involved in land use, landowners, consulting engineers and developers.
- Meetings with consulting engineers, planners, landscape architects, and development approval officers to introduce the guide;
- Meetings with key groups representing land development and community interests;
- Recognition of the guidelines in various planning documents such as the Long Range Transportation and Land Use Plans

Adoption of planning guidance for the corridor

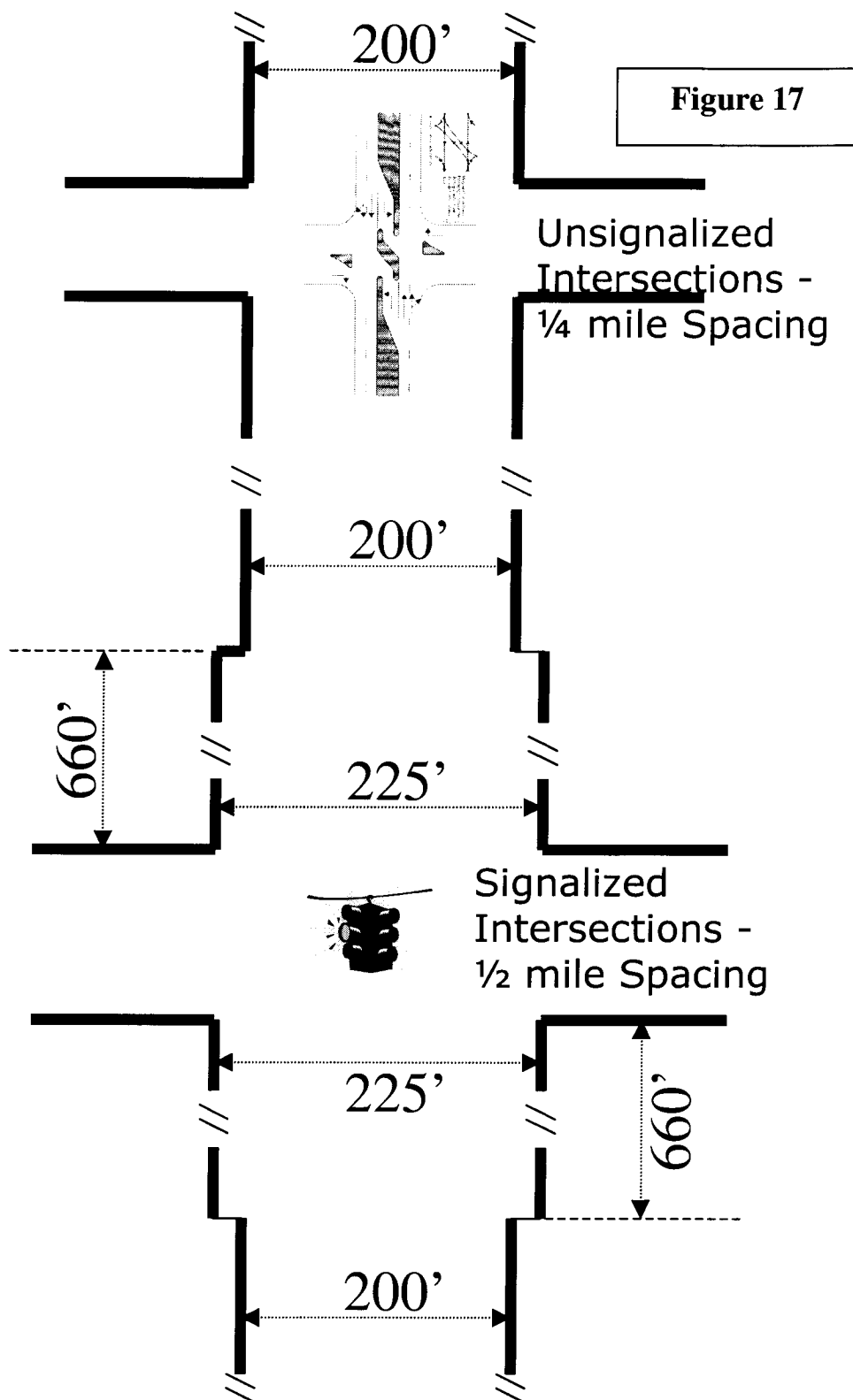
The following actions are recommended to provide the appropriate level of planning guidance for the preservation and development of the 60th Ave corridor:

- Designation of 60th Ave and CSAH 14 as an expressway on the ROCOG Thoroughfare Plan (ROCOG/City/ County)
- Adoption of the Corridor Management Plan (ROCOG/City/ County)
- Establish a preliminary centerline profile for the ultimate corridor improvement project to guide land development adjacent to the corridor (City / County)
- Development and adoption of an Official Street Map designating the future right of way for the corridor. (ROCOG / County)
- Development of a Capital Improvement Phasing Plan for the corridor (City and County)
- Development of a streetscape vision for the corridor (City/County)
- Development of State Aid and Jurisdictional Ownership Principles (City and County)
- Development of cost sharing responsibilities (City and County)

Land Dedication / Platting Policy

Land dedication from property owners through the plat and site plan approval process shall reflect right-of-ways needs outlined in this Corridor Management Plan and the ROCOG Long Range Thoroughfare Plan. The minimum right of way width requirement along the corridor will be 200 feet, with 225 feet needed on the approaches to all potential signalized intersections for a distance of 1/8 mile (660 feet) on the approach to the intersection, as illustrated in Figure 17.

Right-of-way dedication requirements of 60 feet from properties on each side of the corridor shall be required without any monetary or other compensation. Acquisition of the additional right of way needed (the equivalent of 40 feet on each side of the corridor to create the ultimate 200 foot right of way or 52.5 feet to create the ultimate 225 foot right of way on signalized intersection approaches) is compensated through traffic improvement district credits, density transfers or purchase.



**Right of Way Requirements
for 60th Ave Corridor**

Consider Adoption of a Corridor Management Ordinance

A corridor management ordinance establishes procedures to preserve and acquire needed right-of-way and to protect the corridor for future expansion. A corridor management ordinance should include:

1. A requirement for Coordinated Site Planning of adjacent properties:
 - Encourage cooperation among landowners to prepare prospective overall development plans that provide for coordinated development and access for adjoining parcels.
 - Encourage site design configurations that cluster structures and uses with coordinated circulation and access.
2. Special criteria to manage the land uses adjacent to the corridor. This might include a combination of conventional zoning measures, such as setbacks and lot dimensional requirements, as well as innovations such as on-site density transfers and cluster zoning.
3. Formalized access and traffic management criteria either by reference or by specific language as part of an adequate public facility requirement for development along the corridor.
4. Specific restrictions on residential and nonresidential construction within the designated corridor. Establish a basic requirement that restricts development within the designated right-of-way without a variance or special permit.
5. Identify interim uses that are permitted within the corridor. There are uses that do not involve substantial structural improvements, such as agriculture, nurseries, or outdoor storage. Allowances for interim uses provide for some economically beneficial use of reserved land until it is needed for the transportation facility.
6. Include a variance and appeal process that would provide flexibility to work with the unique circumstances of each development site and accommodate reasonable requests for deviation from standards.
7. Include recognition of the need for intergovernmental coordination. This may include language that requires coordination of corridor management activities between jurisdictions. Corridor management programs are strongest where there is consistency of standards among the participating

local governments. Coordination can be achieved through information sharing, collaboration, and intergovernmental agreements among local planning agencies on land development and transportation decisions affecting right-of-way and access management.

ROCHESTER - OLMSTED COUNCIL OF GOVERNMENTS
2122 CAMPUS DRIVE SE
ROCHESTER MN. 55904-7996
PHONE (507) 285-8232
FAX (507) 287-2275

MEMORANDUM

TO: Rochester City Council / Committee of the Whole

FROM: Charles Reiter
 Senior Transportation Planner

DATE: September 25, 2003

RE: ROCOG Circle Drive Traffic and Access Management Plan

BACKGROUND

In 2001 work was begun on an evaluation of current and future traffic operation characteristics of the Circle Drive corridor with the intent of developing a plan or approach for managing future access and intersection improvements. A consultant was hired to provide technical assistance in evaluating future traffic and access needs and how the traffic mobility of the corridor would be affected by continued growth in traffic and potential demand for additional access locations along the corridor. In 2002 the final technical analysis report was completed and submitted to staff. As time has permitted staff has been considering the information in the technical analysis with the idea of developing a policy guide and recommended improvement plans for responding to future access & traffic improvement requests along the corridor.

The framework that ROCOG has identified for putting the findings of the technical study into use is as follows:

- 1) First, adopt general policy guidance suggested by the study that can be used in evaluating future requests for access or traffic improvements;
- 2) Recognize the improvement recommendations found in the Technical Study not as a final plan initially but as a guide to respond to requests for improvements and to development proposals on property adjacent to the corridor;
- 3) As time permits, work on the development of final segment level plans that will detail the ultimate improvements planned for each section of the corridor. This will involve meetings with landowners and development interests along each section of the corridor to work out solutions to issues consistent with the policy guidance adopted as part of #1;
- 4) Adopt and publish a final corridor level implementation plan that combines the work of the previous three steps to present a single source document to provide guidance in the future.

The following graphic illustrates the system that was studied. It looks at approximately 16 miles of roadway corridor which had 80 access openings at the time of construction. Currently 65 median openings are in use, with 7 having been closed, 6 yet to be developed and 2 not being used. This works out to an average of ~ 4 medians per mile or an average spacing of $\frac{1}{4}$ mile.

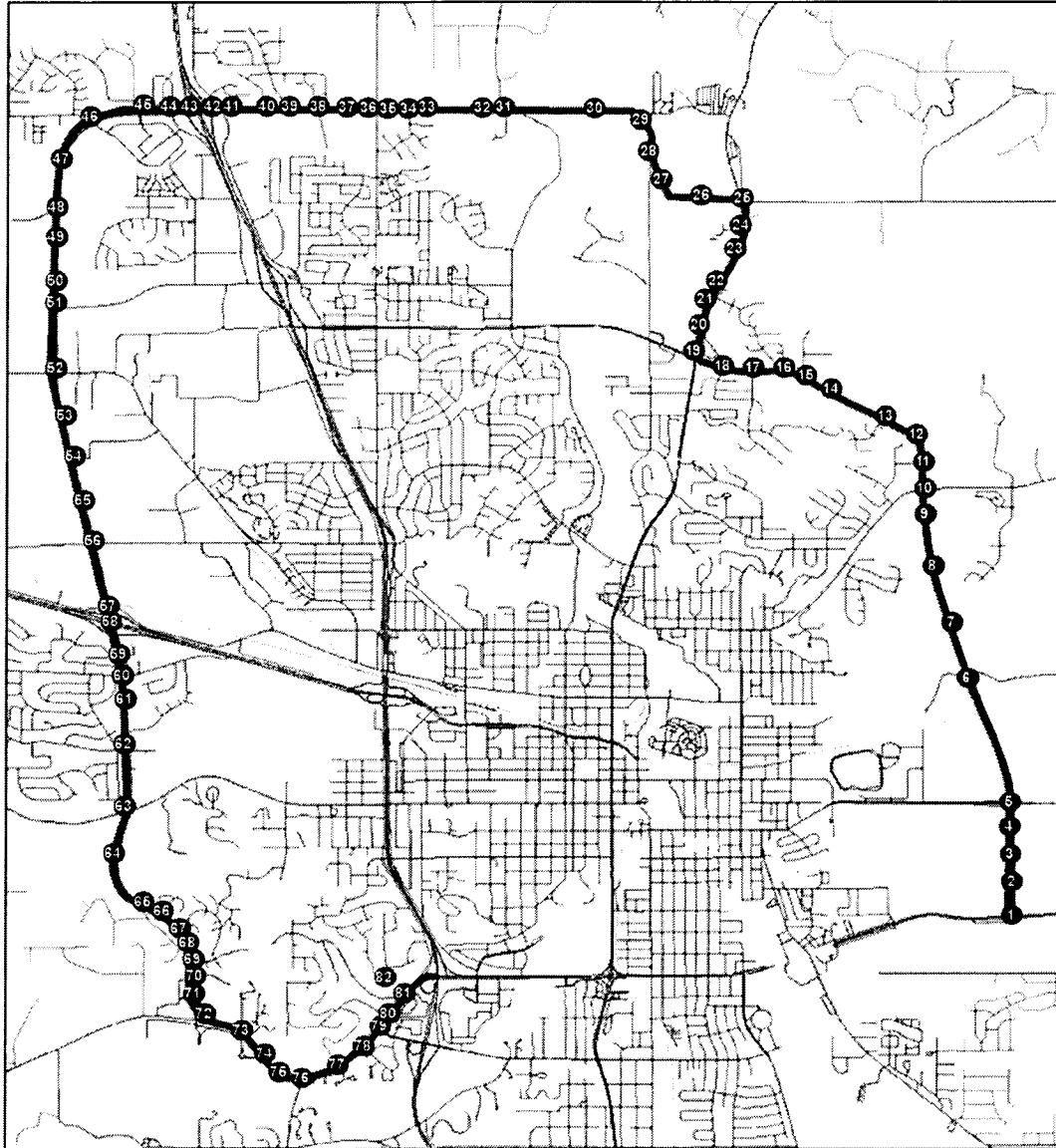


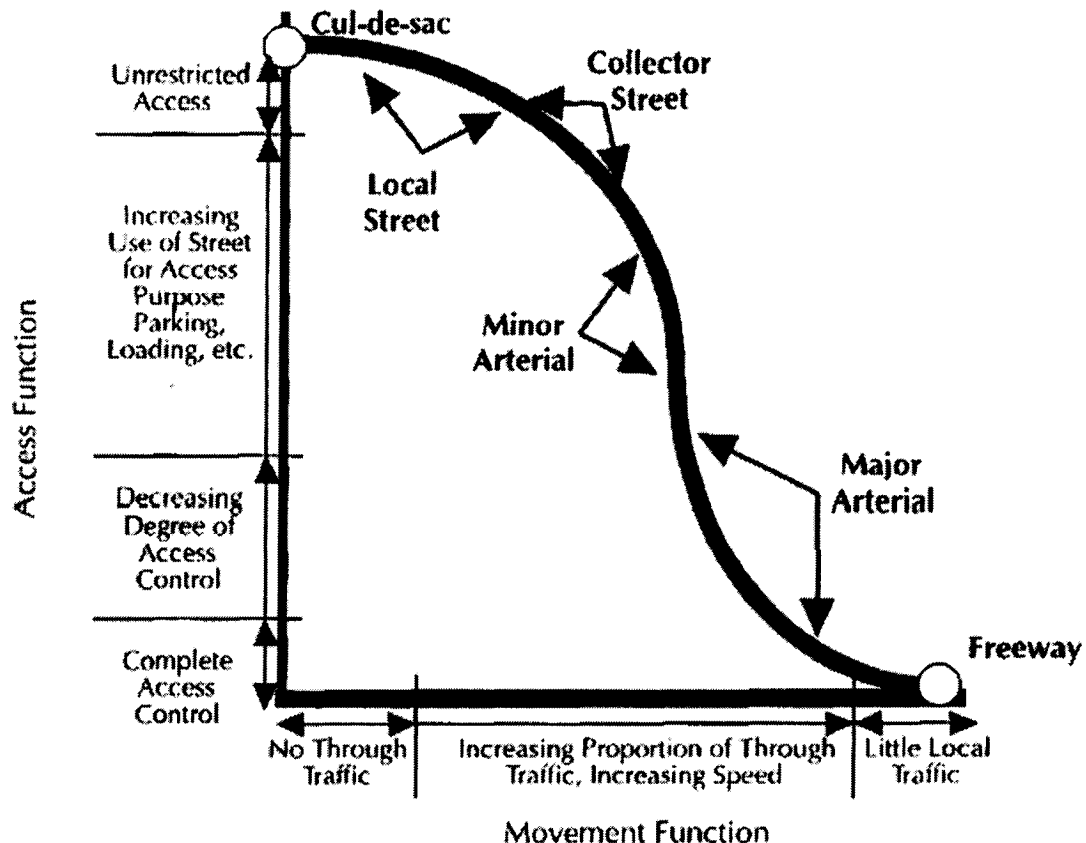
Figure 1

Intersection ID Numbers

Principles of Traffic Management

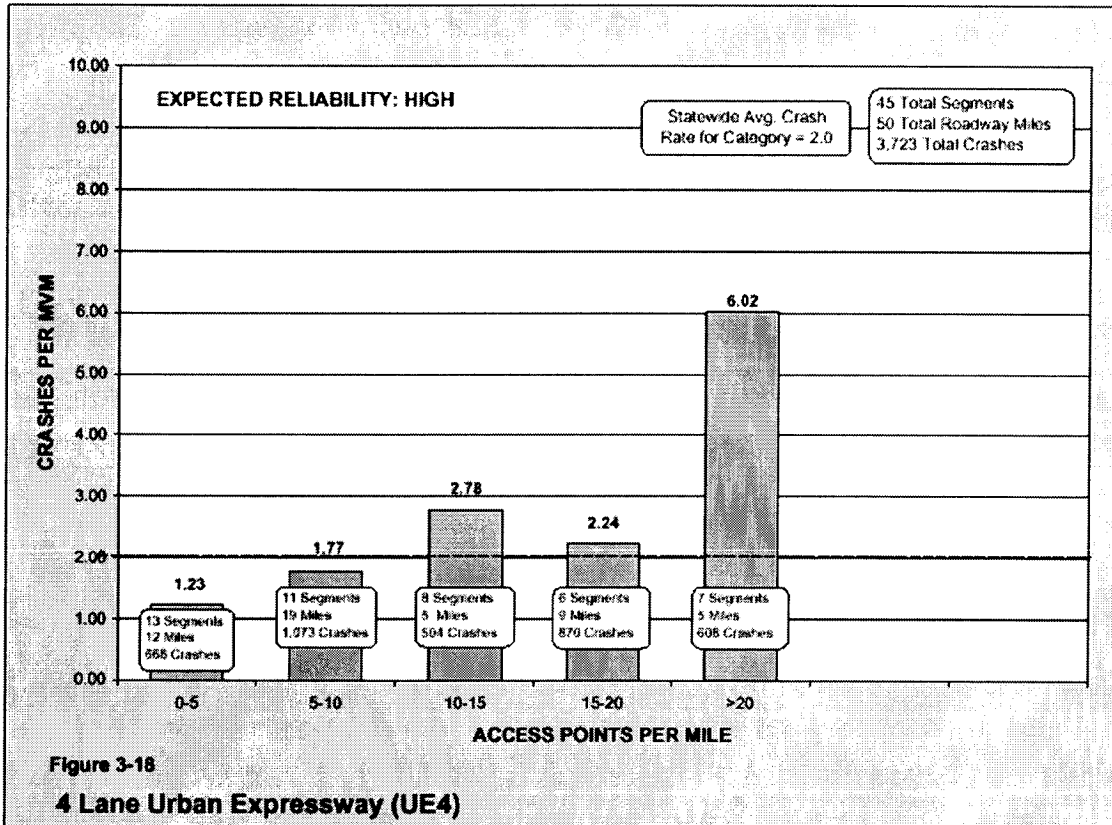
Before proceeding to review the proposed Policy Plan for the corridor, I think it is instructive to briefly review some of the principles of traffic management that have guided the study and analysis of this corridor. The basic principles are as follows:

1. The spacing of traffic signals governs the performance of a roadway corridor
2. Spacing guidelines should be keyed to roadway function and classification. Spacing should be more restrictive along strategic and principal arterials in order to provide needed capacity, to improve safety, and to improve traffic flow efficiency.



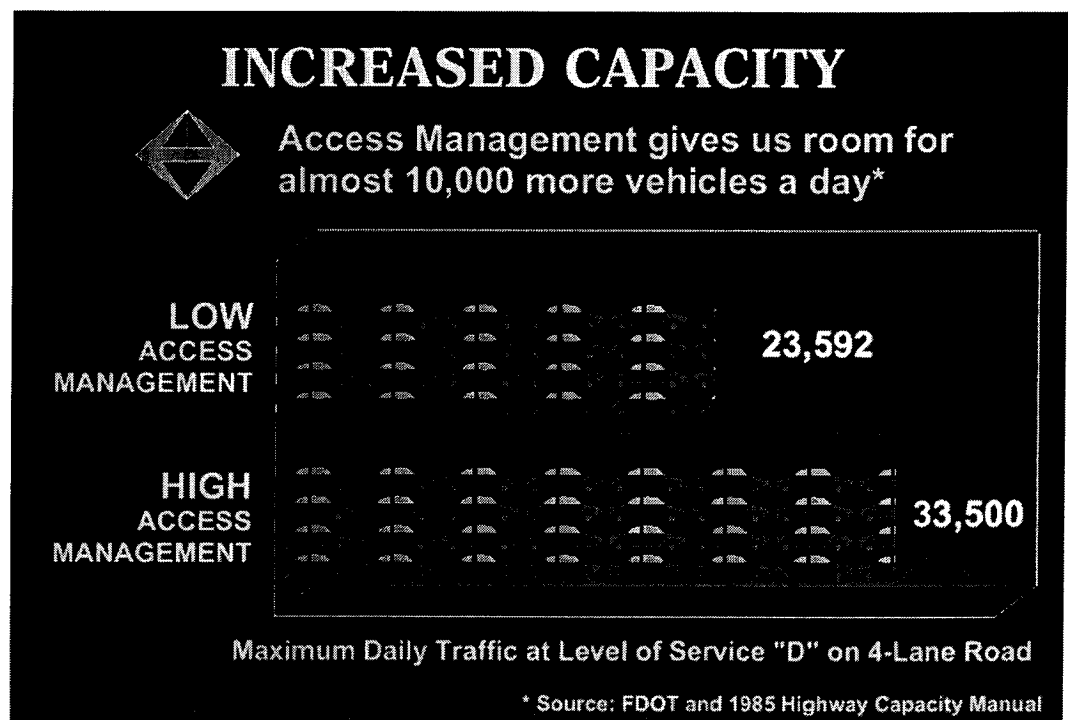
3. Operating speed is directly related to traffic signal spacing. Signal spacing criteria should take precedence over access along principal or strategic arterials.
4. Spacing needs to address the full range of intersecting facilities, including interchanges, signalized streets and driveways and unsignalized streets and driveways, as well as the design of median openings and corner clearances
5. Evenly spaced signals work best if a goal is to develop a progressive traffic flow system, and deviations from equal spacing distances should be minimized
6. Reasonable access to property must be available. However, this may involve access off of an intersecting street rather than direct access.
7. The spacing of unsignalized access needs to consider acceleration and deceleration distances in relation to upstream and downstream streets and driveways
8. Conflict separation and minimizing the number of conflict points within conflict areas is essential to maintaining travel times, capacity and safety.

The following graphics highlight the relationship of access density to roadway operation. In the first graph, a comprehensive study done for MNDOT of many miles of roads throughout the state show increasing levels of accidents can be expected as the # of access per mile goes up.

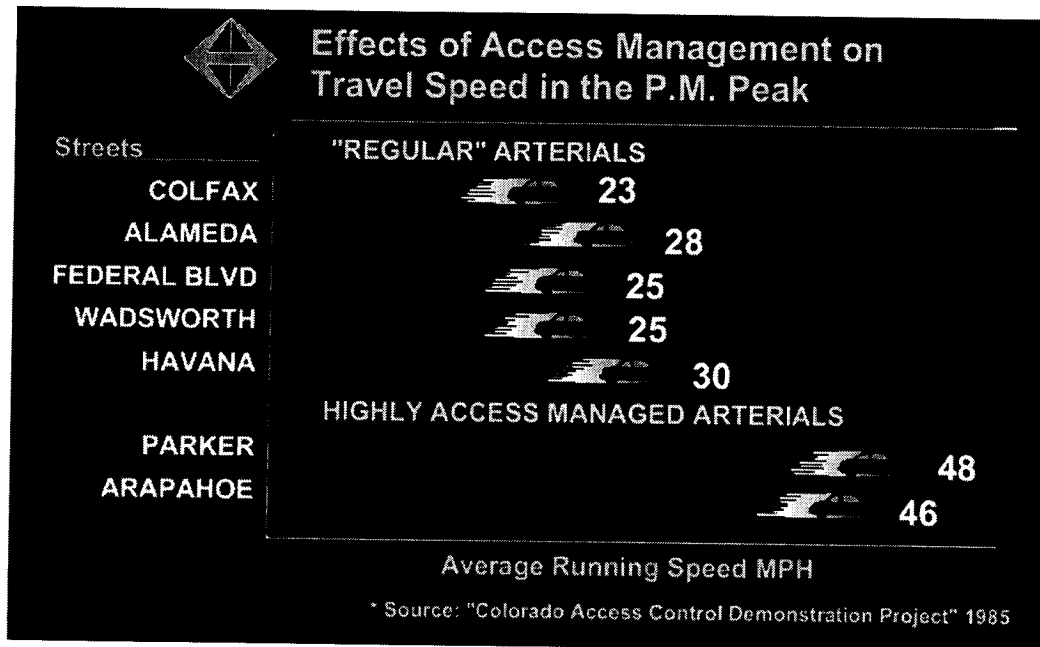


Studies conducted have also shown that managing access can also preserve capacity. In times of tight budgets, access management can be a cost effective way to extend the life of a roadway facility from a capacity standpoint.

Access and traffic management can also preserve the traffic mobility function of the corridor more effectively than alternative capital improvements. The graphic on the next page



illustrates results from a study in Colorado that have been supported by other projects and studies throughout the country.



Principles of Signal Spacing

Since the spacing of traffic signals is so important to how a corridor performs, it is important to understand some basic principles of signal spacing as well. These can be summarized as follows:

1. The spacing of signals is the single most important factor in setting what the maximum progression speed will be and how much of the green time at a signal will effectively serve a platoon of cars moving down the corridor (known as the "progression band")
2. Signal spacing should be considered that provides for the greatest flexibility and efficient traffic flow at different travel speeds, balancing the ability to handle high peak volumes as well as high off-peak travel speeds. Desirably, during off-peak conditions, the roadway will operate at 40-50 mph while in the peak hour 30 mph may be reasonable with sufficient capacity to meet the demand for traffic.

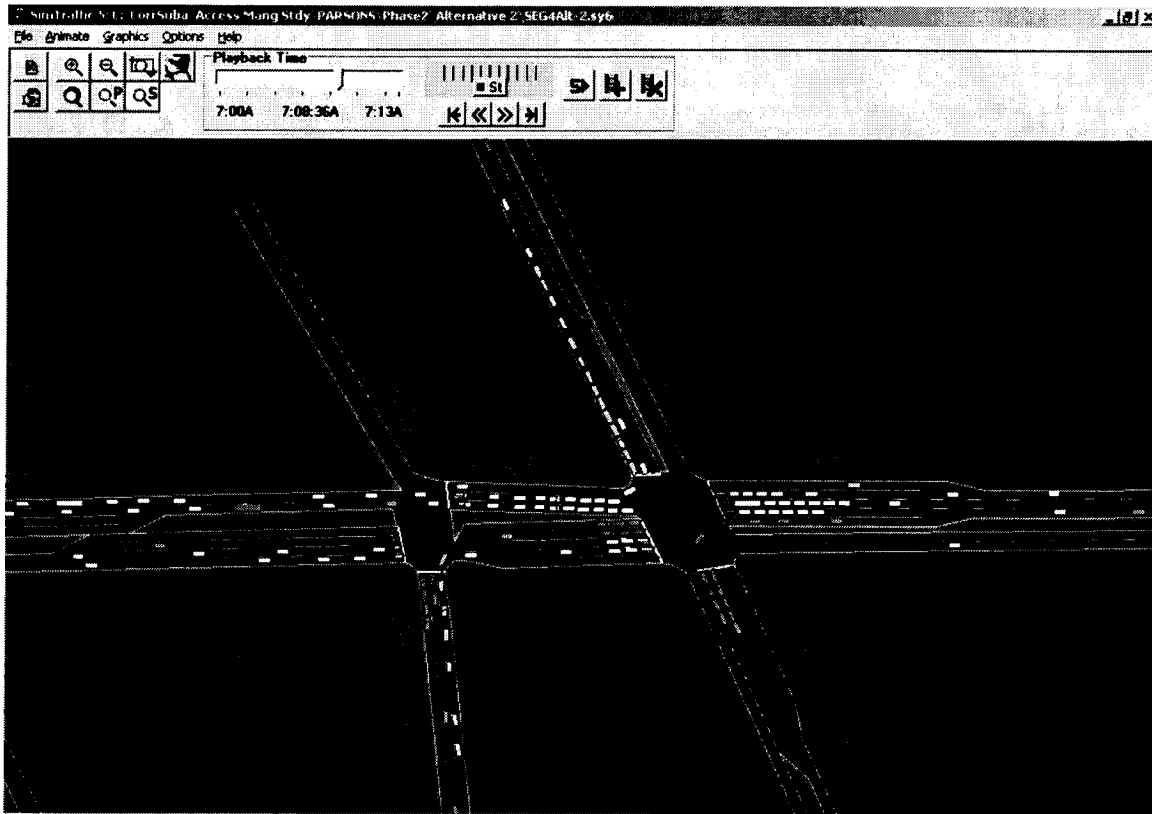
Progression can be achieved with spacing as short as $\frac{1}{4}$ mile, but only with short cycle lengths such as 60-70 seconds will the progression speed reach 30 mph. Short cycle lengths such as this, however, have so much lost time built in (yellow and red transition times) that they do not provide the capacity needed to meet peak hour demands, and as a result peak hour performance will typically fall to average travel speeds below 20 MPH with signals at $\frac{1}{4}$ mile.

$\frac{1}{2}$ mile spacing has generally been found to provide the range of flexibility needed to handle both peak and off-peak conditions in the most efficient manner. With the 120 second cycles typically needed in the peak hour for capacity, $\frac{1}{2}$ mile can still provide up to 30 mph progression, while in the off-peak, using shorter 70-80 second cycles, it can provide 45-50 mph average travel speeds. Maximum flow rates and minimum fuel consumption and emissions are

normally achieved at on a system operating at about 40 MPH on average, and 1/2 mile spacing of signals has been found to provide the best balance of tradeoffs in achieving this.

TECHNICAL STUDY SUMMARY

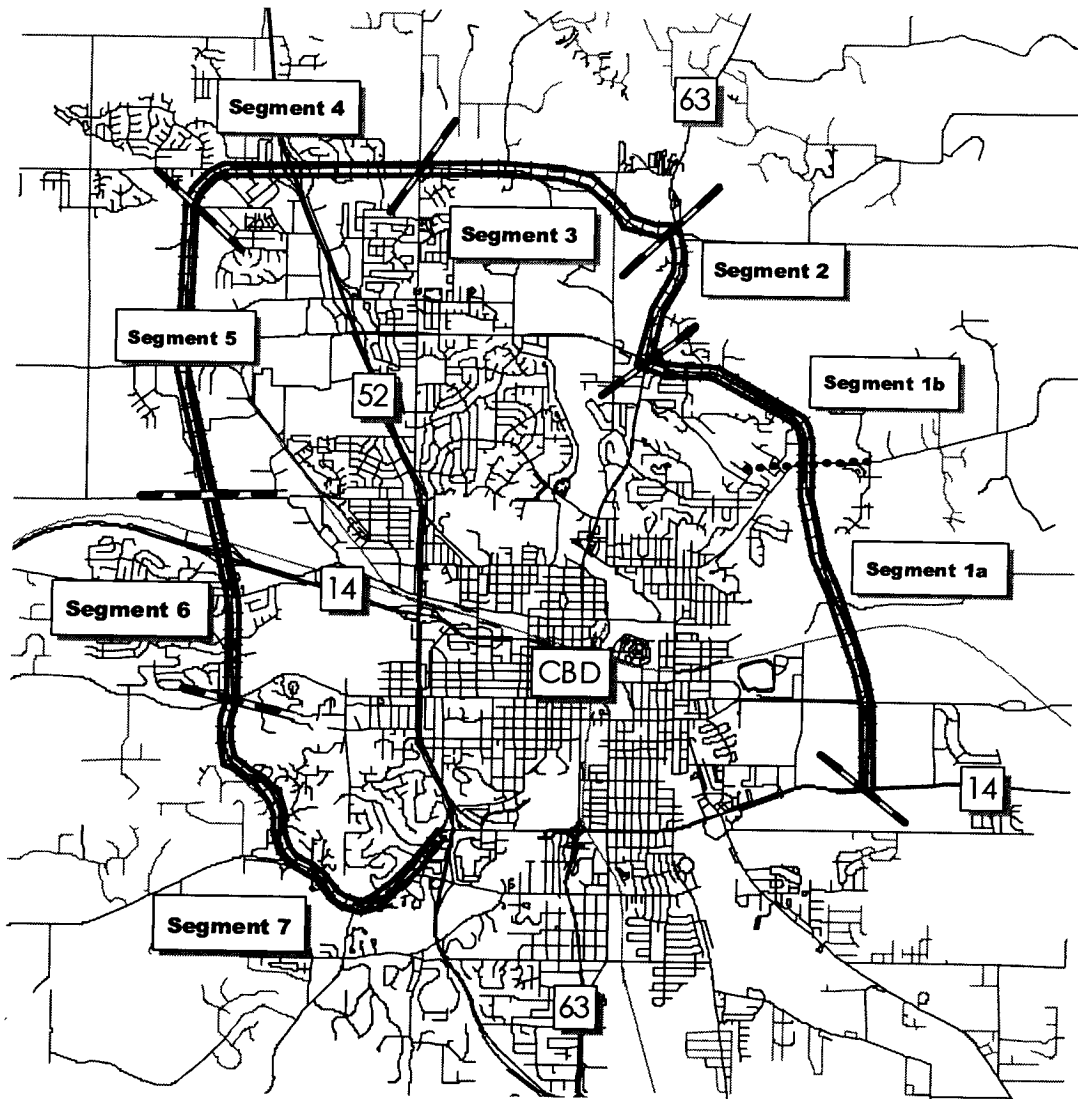
The technical study that was completed involved a range of tasks including the collection of existing traffic data, forecasting of future land use and peak hour traffic volumes, and technical analysis of traffic operation using standard traffic performance and simulation models to measure operating characteristics and future performance under projected traffic conditions. Below is a snapshot of the traffic simulation, which permits the viewing of simulated traffic operations as well as providing information on anticipated delay, congestion, travel speeds and



other measures which permit us to compare alternatives

For the purposes of the study the corridor was broken into seven analysis segments shown on the next page with the goal of identifying strategies within each segment for achieving the following performance objectives:

1. Average Travel Speeds of 40 MPH across the segment
2. Maximize Traffic Progression
 - Desirably 35-40% of the mainline green time would fit within the progression band
3. Manage traffic movements at signalized intersections with reasonable cycle lengths
 - 120 seconds is the preferred maximum length of signal cycles
4. Maintain a reasonable level side street traffic delay at all intersections
 - Average vehicle delay should be less than one cycle length for side street traffic



One reason the corridor was broken into segments for evaluation is that we found that there are critical points where traffic volumes, particularly turning volumes, are so heavy that it would be impossible to maintain a high level of progression through these locations, and thus we chose to use these locations as anchor points for the end of segments. These locations included the TH 14 West interchange, the TH 52 North interchange, the intersection of North Broadway and East Circle Drive, and the intersection of Viola Road and East Circle Drive. Other distinctions were made based on the character of development and design of the corridor (for example, we differentiated segment 6 from 7 based on these factors).

In the study we went through up to three iterations evaluating different types of improvements in each segment in an effort to identify what kinds of improvements would need to be considered. The types of improvement options considered included:

- Physical design –
 - 1. Turn lanes
 - For Left turn lanes we considered
 - Different number of turn lanes (single vs dual)

- Restriction on side street left turn movements
- For Right turn lanes we considered
 - Need for deceleration and acceleration lanes
 - In high volume locations, linking adjacent intersections with a third continuous lane for acceleration and deceleration
- Local Street System design
 1. local street system interconnections where considered for redirecting access traffic to preferred signal or median locations
- Signal operations
 1. different styles of timing patterns where considered to maximize efficiency of intersections
 2. the spacing of signals relative to segment performance was considered
- Alternatives to left turns
 1. Utilization of right turn out / u-turns in lieu of left turns as a means to minimize signalization needs.

FINDINGS OF THE TECHNICAL ANALYSIS

The technical analysis results are summarized broadly on page 9 in terms of a comparison of the "2025 No-Build" versus an enhanced corridor plan that included additional turn lanes, access restrictions and local street system improvements. As you can see from that table significant improvements in average travel speeds and progression width were achieved under alternative plan concepts. The concepts used for the final iteration of analysis are illustrated in the pictures attached at the end of the report.

Recommended Policy Goals and Implementation Concepts

Based on the results of the technical evaluation and applying the principles of traffic management and signal spacing, a set of general policy guidelines were prepared for consideration. The Policy Guide begins on Page 10. ROCOG reviewed and endorsed this policy guide on September 25. As noted on page 1, there is a subsequent follow-up stage to this work that will require more detailed consideration of the plan for each segment in consultation with landowners, development interests and the road authorities. There are some questions or issues in each segment that will require review. However, by adopting the General Policy Guidelines presented herein there will be a framework in place as a starting point for considering these issues.

Table 1: Summary of Performance Evaluation

SEGMENT	SECTION	2025 NO-BUILD NB/WB SPEED	2025 NO-BUILD SB/EB SPEED	2025 NO-BUILD PROG. BAND	2025 BUILD NB/WB SPEED	2025 BUILD SB/EB SPEED	2025 BUILD PROG. BAND
1A	TH 14 TO CSAH 2	39	39	25%	41	40	36%
1B	CSAH 2 TO TH 63	34	32	17%	37	39	31%

Build Level of Service < D: Unsignalized – 2* / 9 / 14 / 16 / 18*
Dual Lefts: 10 / 19

2	37 TH St to 55 th St	26	34	28%	41	35	26%
---	--	----	----	-----	----	----	-----

Build Level of Service < D: Unsignalized – 20* / 21*

3	TH 63 to 18 th Ave NW	32	31	13%	36	38	28%
---	----------------------------------	----	----	-----	----	----	-----

Dual Lefts: 31 /

4	18 TH Ave to 48 th St NW	19	20	8%	27	26	20%
---	--	----	----	----	----	----	-----

Build Level of Service < D: Unsignalized – 38 /
Dual Lefts: 41 / 42 / 43 / 46

5	48 th St to 19 th St NW	25	17	6%	28	30	23%
---	---	----	----	----	----	----	-----

Build Level of Service < D: Unsignalized – 48 / 55*
Dual Lefts: 49 / 51 / 52 / 56

6	19 th St NW - 2 nd St SW	22	24	9%	25	28	31%
---	--	----	----	----	----	----	-----

Build Level of Service < D: Unsignalized – None; SIGNALIZED: Intersection 57
Dual Lefts: 57 / 60 /

7	2 nd St to TH 52	36	37	22%	39	39	38%
---	-----------------------------	----	----	-----	----	----	-----

Build Level of Service < D: Unsignalized – 64 / 65 / 68 / 69 / 70 / 71 / 73 / 74 / 77 / 78 / 80*
Dual Lefts: 72 / 76 / 79

CIRCLE DRIVE TRAFFIC AND ACCESS MANAGEMENT POLICY GUIDE

Management Principles and Implementation Concepts

A. PREFACE

The intent of this policy guide is to provide interim guidance on the implementation of traffic management and access improvements along the Circle Drive Corridor illustrated in Figure 1 until such time as specific improvement plans for sections of the corridor are developed and adopted.

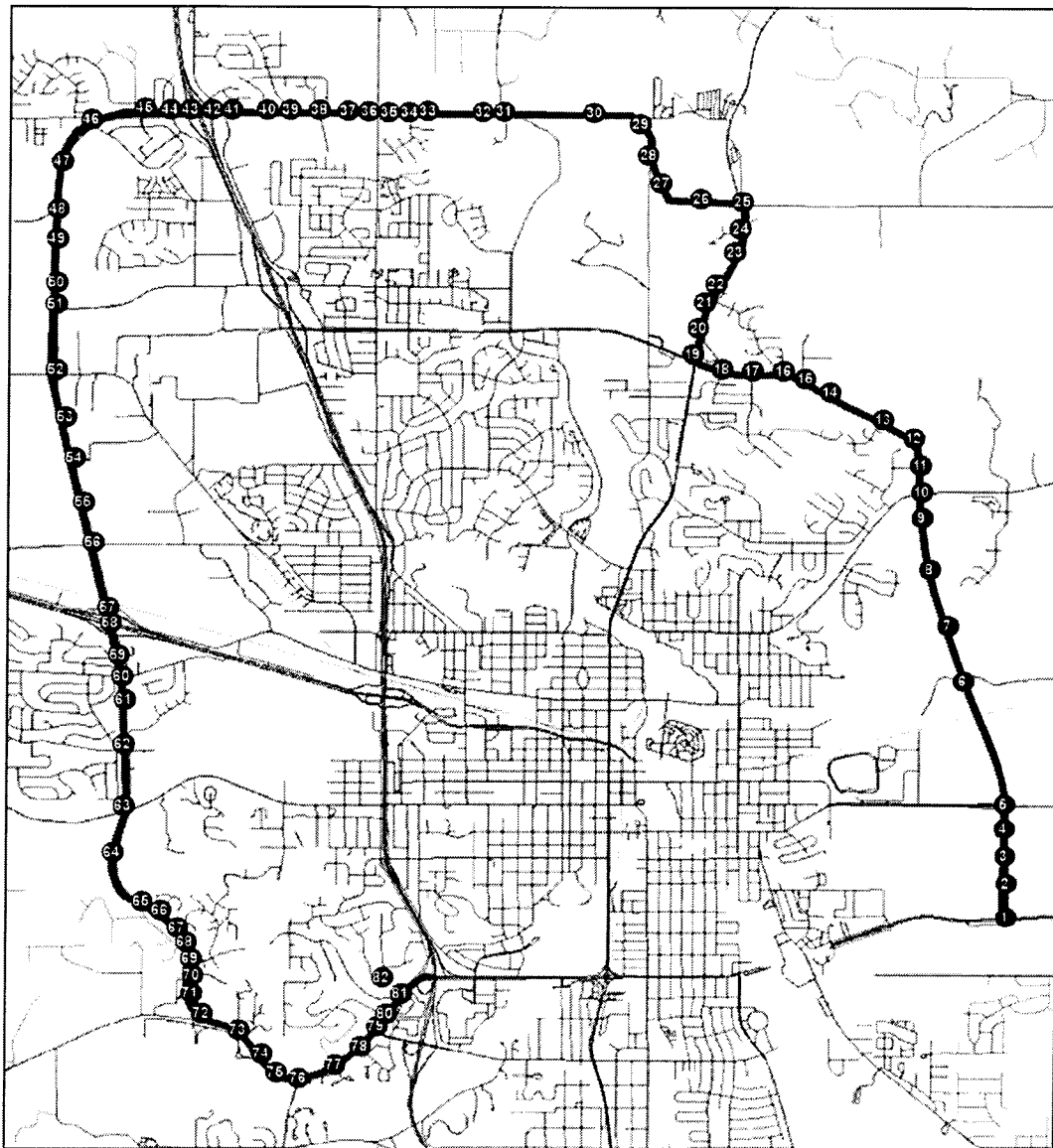


Figure 1

Intersection ID Numbers

The purpose of these principles and concepts is to provide a guide to decisions regarding traffic and access improvements that will preserve the function of Circle Drive as a major regional traffic corridor with a high level of safety, capacity and mobility. The principles and concepts should also contribute to structuring the layout of lands lying adjacent to the corridor in a manner that supports the function of Circle Drive. Implementation of these principles and concepts should aid in the preservation of the substantial public investment that has been made in the Circle Drive corridor and reduce the need for expensive remedial measures in the future.

The principal factors that are considered in the management of traffic and access to preserve the quality of traffic flow, capacity and safety are:

1. The spacing and design of street and private access intersections
2. The spacing and design of medians and median crossovers
3. The spacing of traffic signals and the design of signalized intersections

To achieve the safest and most efficient traffic flow, uniform or near uniform spacing of traffic signals is desirable. In planning for corridor level traffic management, it is desirable to select the preferred locations of traffic signals first, with existing or future unsignalized intersections managed through design to restrict the need for future signal installation. The spacing of signals should be related to desired operating speeds for the corridor. The local street system on lands abutting the corridor should be planned to facilitate the interconnection of adjacent lands such that local area traffic has alternatives to using Circle Drive and access to signalized intersections is available to all local motorists.

When the right of way for Circle Drive was acquired and during the construction of the corridor, predetermined access locations (a location of access reserved for the adjacent property at the time access rights were required) were established. These access locations are entitled to right-in, right-out access to the mainline of Circle Drive. The opening or closure of median crossovers associated with these access locations will be managed by the road authority to achieve desired levels of mobility and traffic progression. Decisions regarding the signalization, restriction or closure of median crossovers should be made consistent with the principles and concepts identified in this Policy Guide to achieve the highest reasonable level of traffic progression, safety and efficiency.

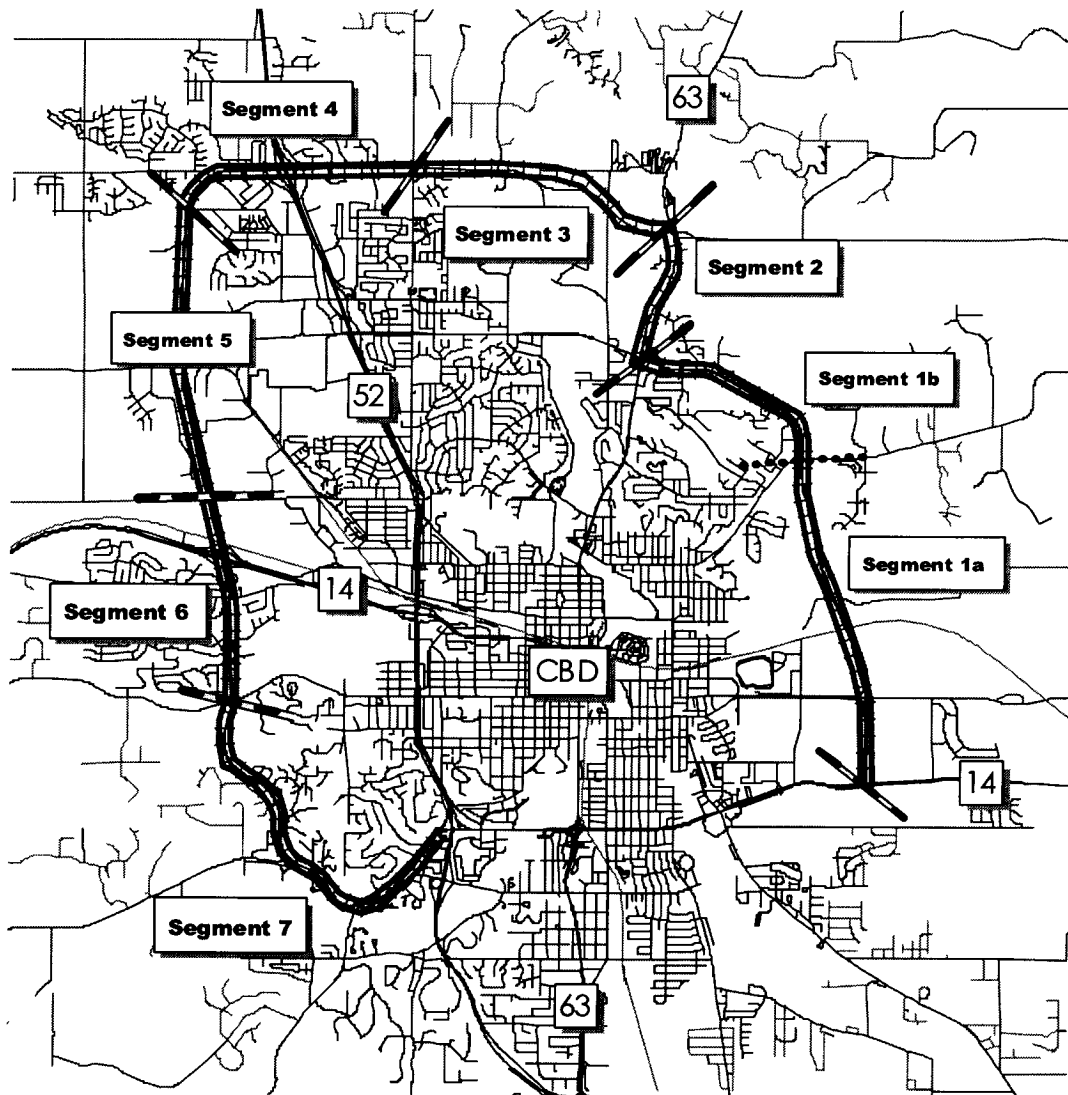
Determining solutions in advance of significant changes in conditions such as traffic volumes is desirable to avoid the higher costs associated with future retrofitting. Application of the following principles and concepts are endorsed as a guide to achieve the purposes and intent of this Policy Guide.

B. MANAGEMENT PRINCIPLES AND IMPLEMENTATION CONCEPTS

i. General Principles for Corridor Management on Circle Drive

1. The desired target for average operating speeds in segments of the corridor is 40-45 MPH. For the purposes of these policies, the corridor is divided into seven segments as illustrated in Figure 2. At the high volume intersections or at interchanges that form anchor locations for the ends of segments, traffic should be managed achieve the highest feasible level of safety

and efficiency given the presence of multiple signals within short distances or heavy volumes



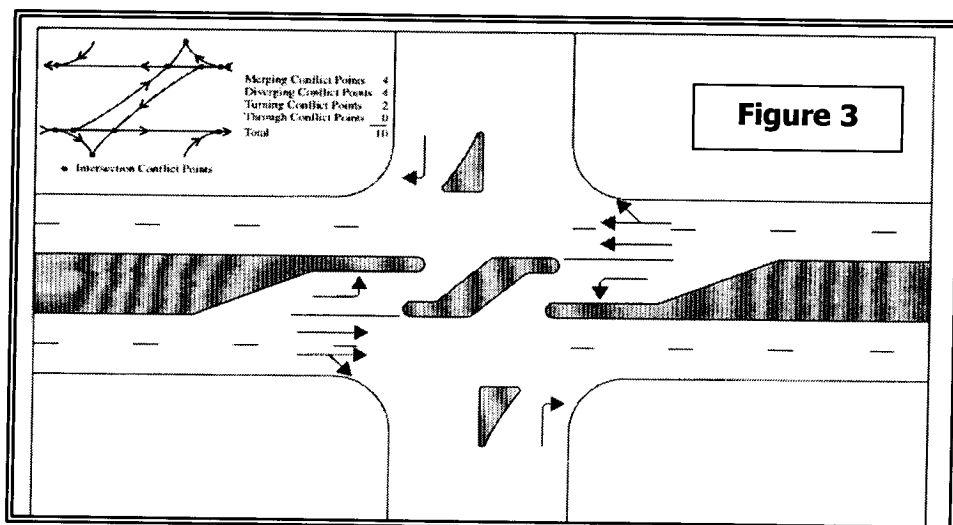
of turning traffic.

2. The desired target for signalized intersections cycle length is no longer than 120 seconds (2 minutes). Achieving this will likely require a commitment over time to capital improvements including construction of dual left turn lanes or mainline auxiliary lanes that will provide for three lanes of traffic on short sections of the corridor between adjacent high volume intersections in order to provide adequate capacity .
3. The desired target for the progression band within segments of the corridor between anchor locations is 35% or greater. Generally speaking, this means an effort will be made to manage the operation of the signal system to make available a minimum of 35% of the mainline green time at any given traffic signal to serve a platoon of traffic moving through a segment of the corridor.
4. Side street traffic delay should be managed to provide acceptable levels of delay at both signalized and unsignalized intersections and access points. For intersections or accesses that

are planned to be unsignalized, this may require a combination of actions including median crossover restrictions combined with the provision of alternative traffic routes to provide local access to the nearest signalized intersections.

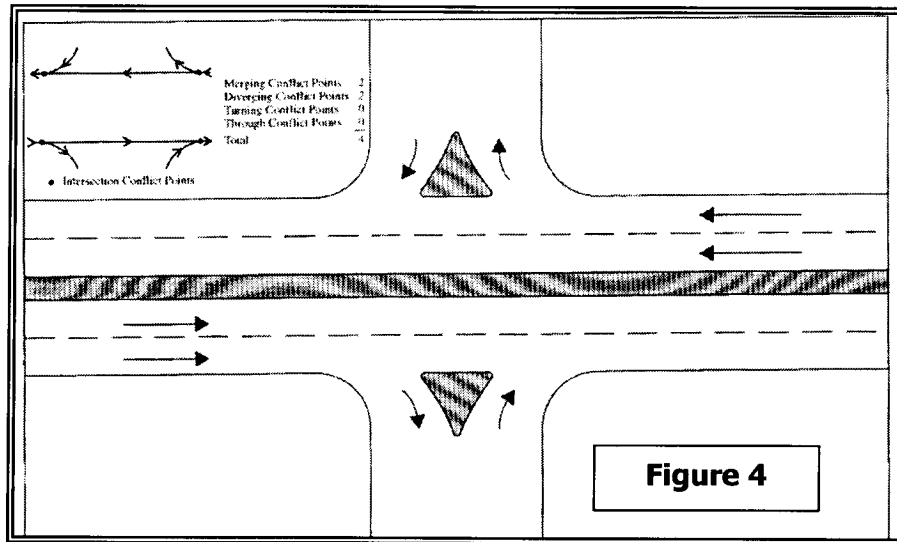
(ii) General Implementation Concepts

1. To achieve the General Principles for Corridor Management listed in Section B(i), the target for spacing between full access signalized intersections should be $\frac{1}{2}$ mile within individual segments of the Circle Drive corridor. Limited signalization at spacing of approximately $\frac{1}{2}$ mile will provide the greatest level of flexibility in implementing timing plans that can handle a range of traffic conditions. Figures 6 and 7 in the Technical Report¹ indicate intersections anticipated to be signalized under the recommended management plan.
2. The street system for the area shall be designed so that the median crossovers that will serve as the location for future traffic signals will be used as connections for public streets that are above the classification of a local or major local street, or that serve major private land development that will generate traffic volumes comparable to higher volume collector or arterial streets (> 5000 vehicles per day).
3. Median crossovers that were constructed to serve existing access openings that are planned to remain unsignalized may be controlled in the future to limit traffic movements for safety or congestion reasons according to the following principles:
 - a. If there are demonstrated safety problems at the intersection or unacceptable traffic operations develop (defined as the Level of Service (LOS) for approach traffic on intersecting streets dropping below a LOS D or total peak hour delay exceeding 4 vehicle hours of delay², left turn traffic will be controlled through use of $\frac{3}{4}$ access design as illustrated in Figure 3



¹ Circle Drive Traffic and Access Management Study, Phase II Technical Report et al

² Recommended standards for unacceptable traffic operations are based on information in NCHRP Report 457, Evaluating Intersection Improvements: An Engineering Study Guide, Transportation Research Board, pp 38-39.



- b. If the $\frac{3}{4}$ access design does not solve crash and congestion problems the next level of access control would be to convert the median crossover to Right In / Right-Out operation only, as illustrated in Figure 4 .

- Access openings that have not been developed at locations where the associated median crossover is not planned for future signalization should be planned for improvement with the understanding partial access restrictions will be implemented consistent with the principles in #3 above. Local street system connections should be made that will facilitate the distribution of traffic from lands served by the access opening to adjacent access locations that are planned for signalization in the future.

Efforts should be made to avoid limiting access for a property to a single planned unsignalized access unless absolutely constrained by physical topography. In such cases an overall limit on trip generation may need to be considered to insure the long term integrity of operations on Circle Drive, or the utilization of outbound right turns combined with U-turns in lieu of outbound left turns onto Circle Drive considered.

- Access locations associated with future signalized median crossovers should serve as many property interests as possible to reduce the need for additional signalization of adjacent median crossovers and to eliminate the need for additional direct access to the corridor. Local street system connectivity should be provided to allow for the dispersal of traffic and to eliminate the need to use Circle Drive for short distance local area trips, and to insure all local lands have access to planned signalized median openings.

(iii) *Intersection Design Principles*

- At all access points along the corridor right and left turn deceleration lanes will be required, with construction or accommodations made for the future construction of second left turns where a need for dual left turn lanes is anticipated in the future.
- Right turn acceleration lanes should be provided wherever projected peak hour right turning volume is greater 10 vph

3. Left turn acceleration lanes may be required at unsignalized intersections if a significant volume is expected and the lane will not interfere with upstream left turn deceleration lanes
4. Sufficient queue capacity should be provided for traffic turning left off the corridor, and adequate corner clearance should be provided to insure traffic turning left onto the corridor will not interfere with traffic operations on intersecting streets. The concept of corner clearance is illustrated in Figure 5. Corner clearances guidelines are:

Arterial Cross Streets:

- 480 feet where left turn lanes are not required on an arterial cross street
- 660 feet where left turn lanes are required on the arterial cross street

Collector Cross Streets:

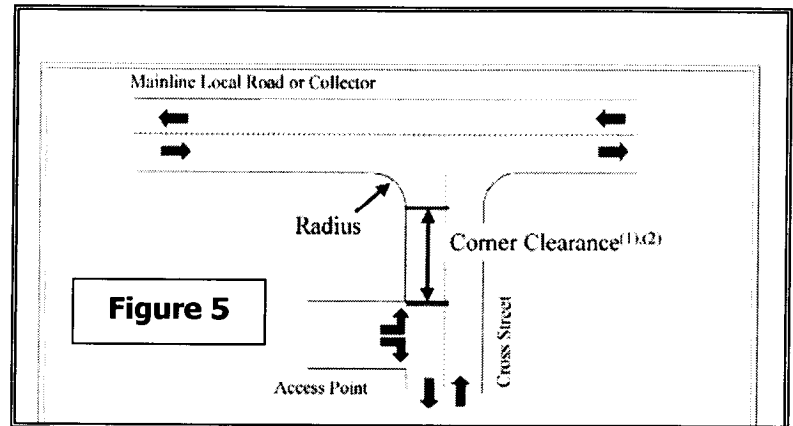
- 250 feet where left turn lanes are not required on a collector cross street
- 480 feet where turn lanes are required on a collector cross street

Local Non-Residential Streets:

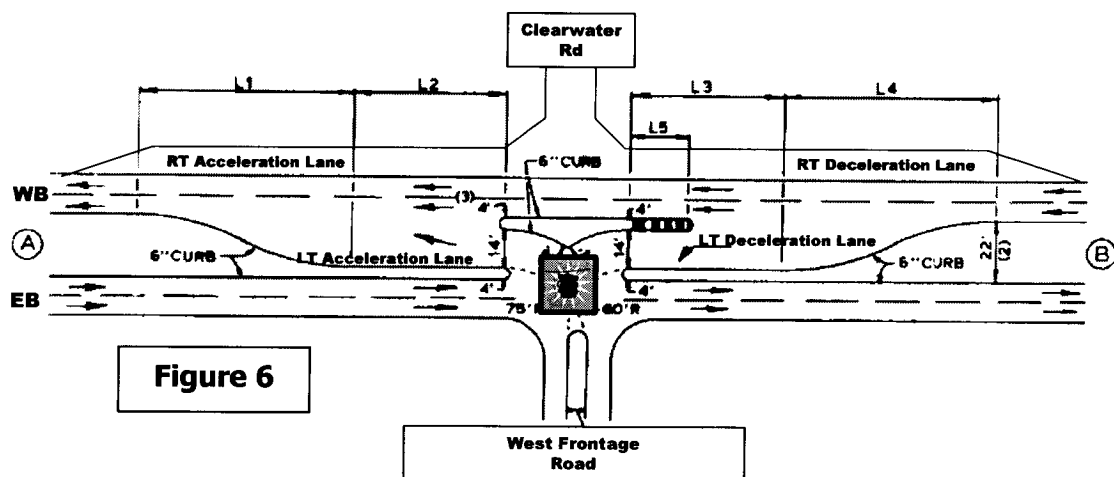
- 250 feet

Local Residential Streets:

- 125 feet



5. Signalized "T" intersections treatments have the potential to provide for the management of high volumes on single approaches without major disruption to mainline flow through the use of a half-signal design. This can be considered as an option where there is a high volume commercial access on one side of the corridor with low volume on no access across the



corridor. Figure 6 illustrates an example of this type of intersection.

6. To maximize the throughput of intersections and in areas where closely spaced signals exist, efforts should be made to install signal coordination systems linking together adjacent signals to permit the application of coordinated timing patterns, and the use of alternative timing patterns such as lead-lag phasing or right turn overlap should be considered.

Exception Process

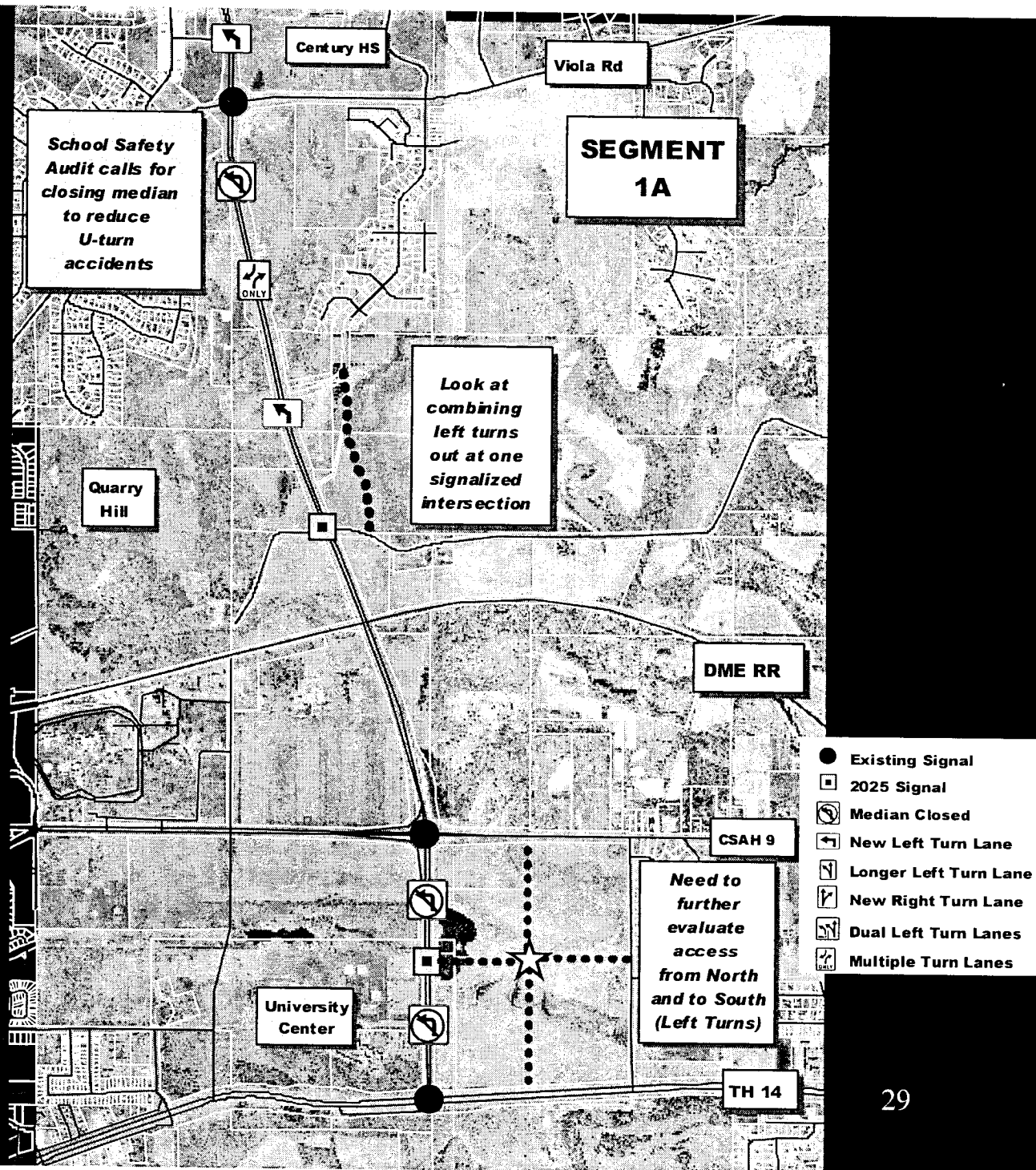
1. Proposals for full access or signalization that are inconsistent with the principles and concepts identified in this Policy Guide shall not be permitted unless a report is prepared that convincingly documents there are no other reasonable alternatives available to full access or signalization, there is a documented necessity for full signalized operation at the location, and the corridor operating speeds, signal cycle length and progression bandwidth goals will be achieved.

Deviations in signal spacing from the locations identified as preferred locations in the Technical Report³ may be considered where, due to consideration of topography, established property ownerships, unique physical limitations or unavoidable or pre-existing land use patterns, the desirable spacing should be modified

³ Circle Drive Traffic and Access Management Plan Phase II Technical Report, January 2002, prepared for the Rochester-Olmsted Council of Governments by Parsons Transportation Group

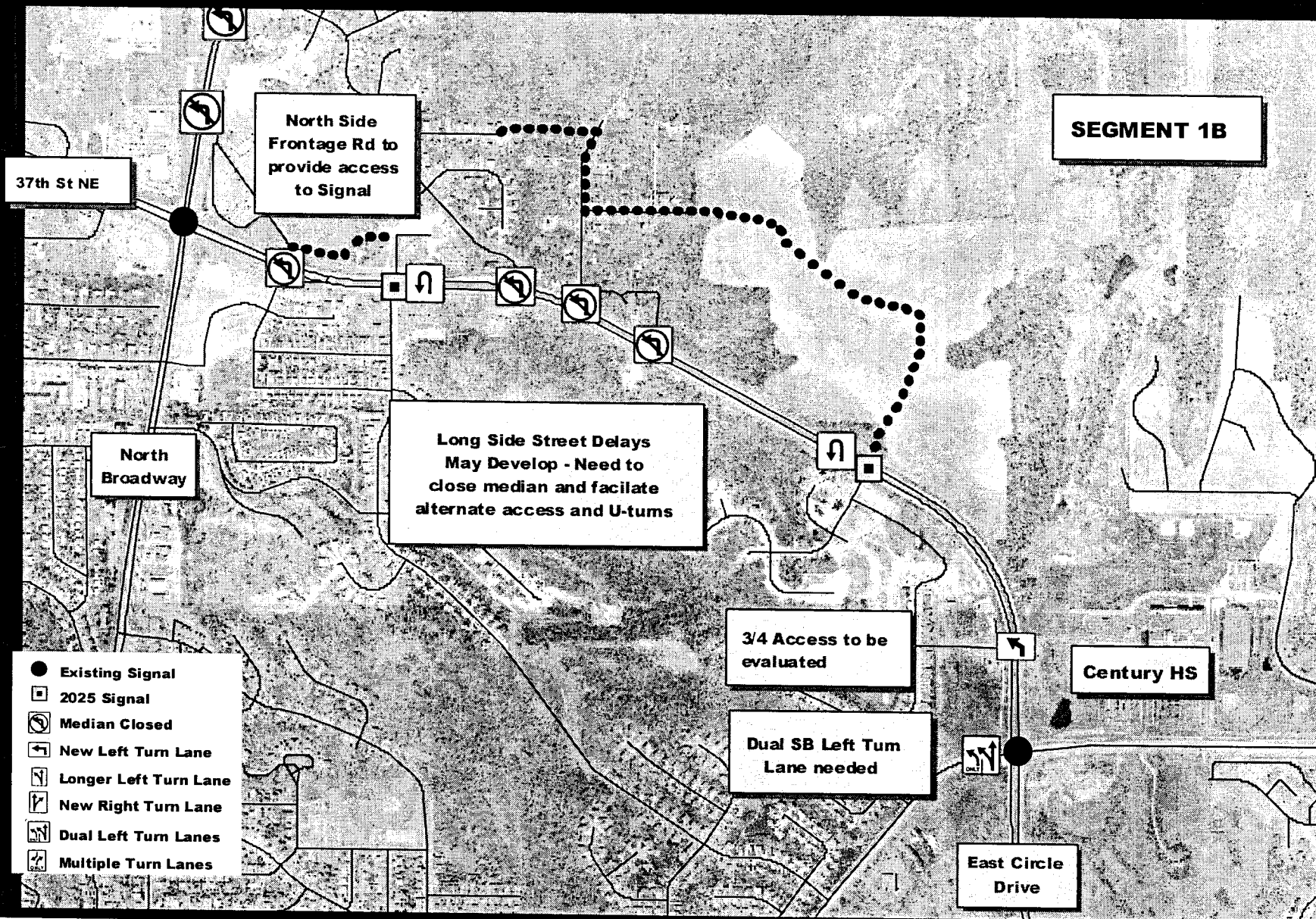
Segment 1A 2025 Phase III

System Options and Other improvements



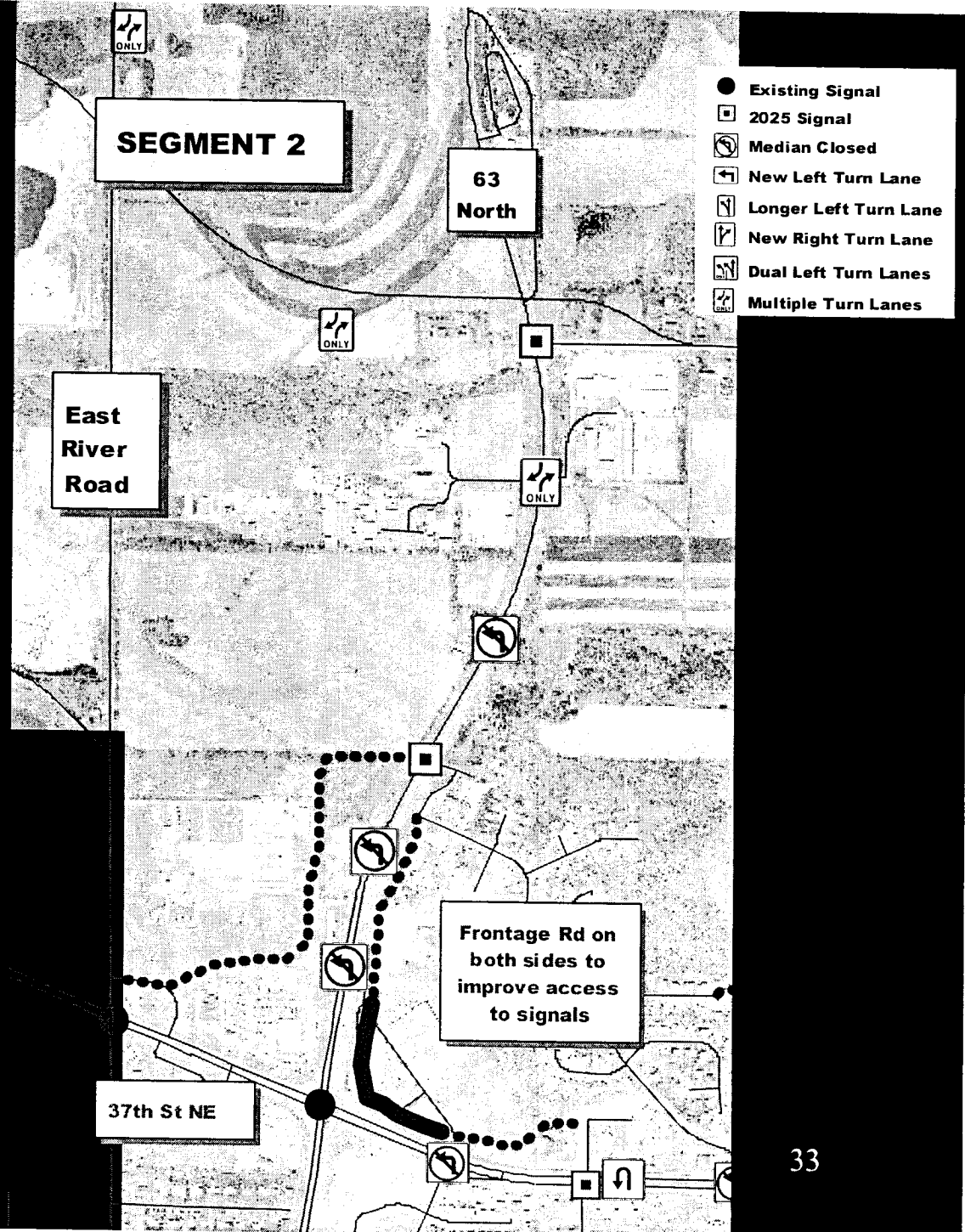
Segment 1B

Alternatives for further Evaluation



Segment 2

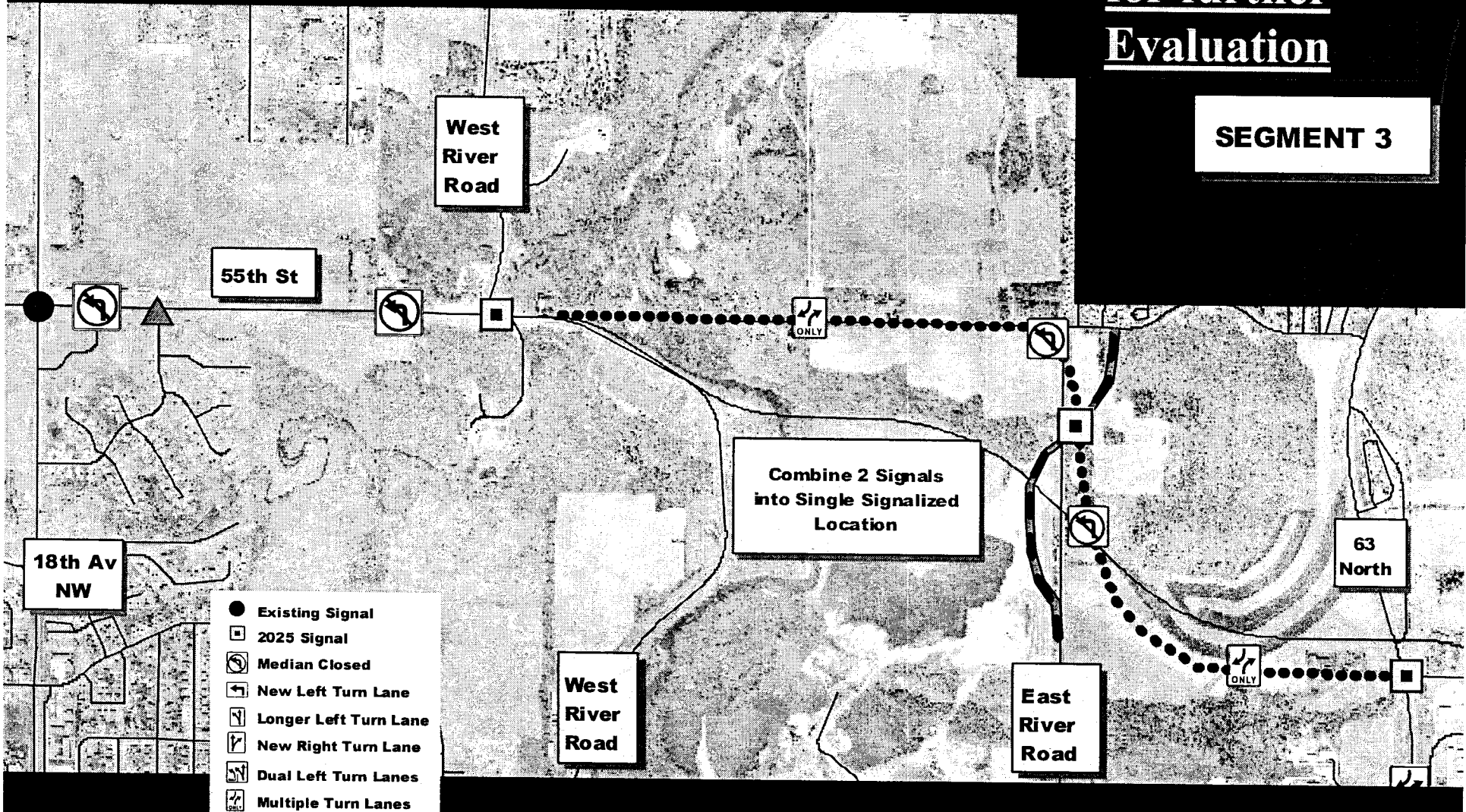
Alternatives for further Evaluation



Segment 3

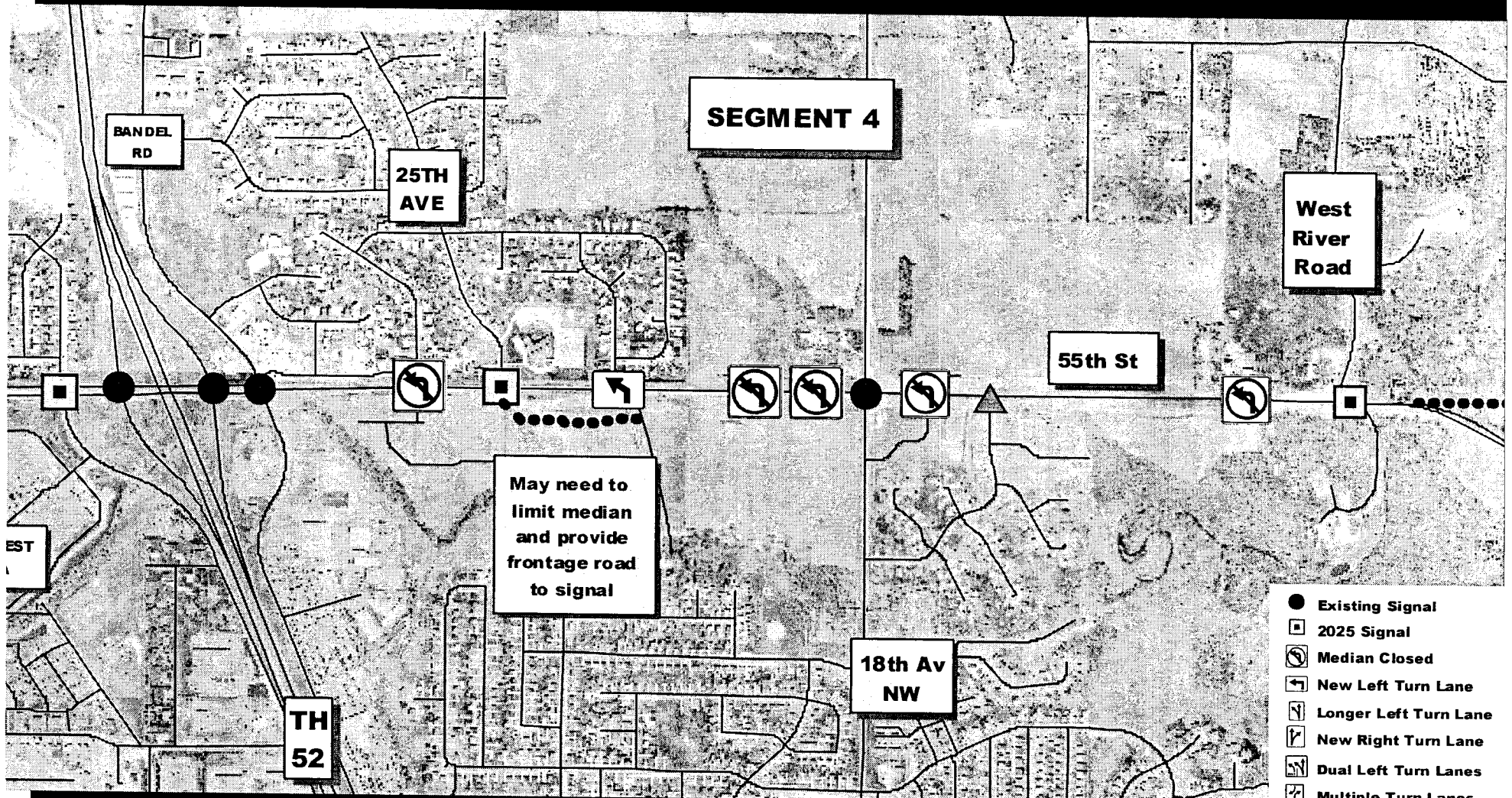
Alternatives for further Evaluation

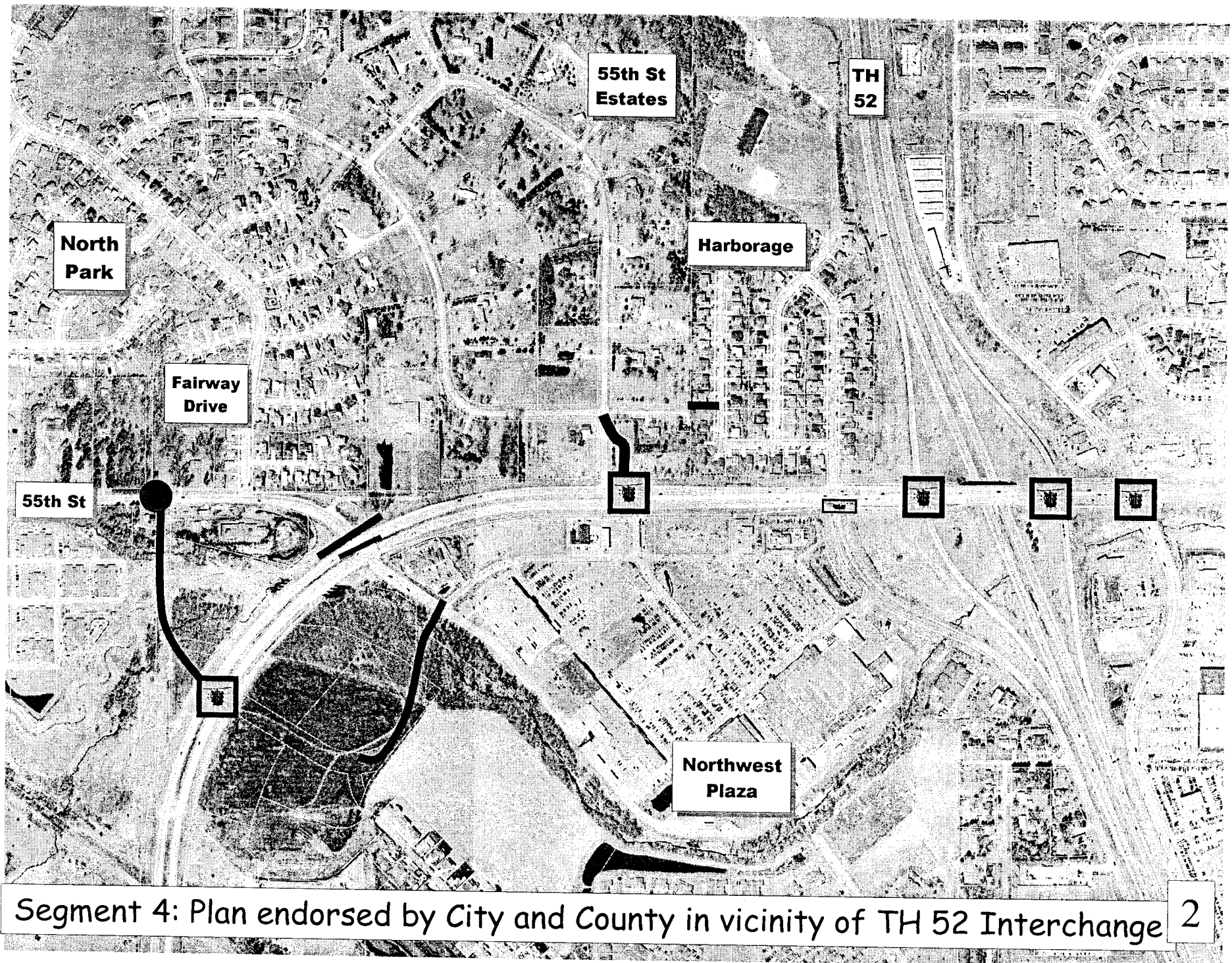
SEGMENT 3



Segment 4

Alternatives for further Evaluation east of Interchange



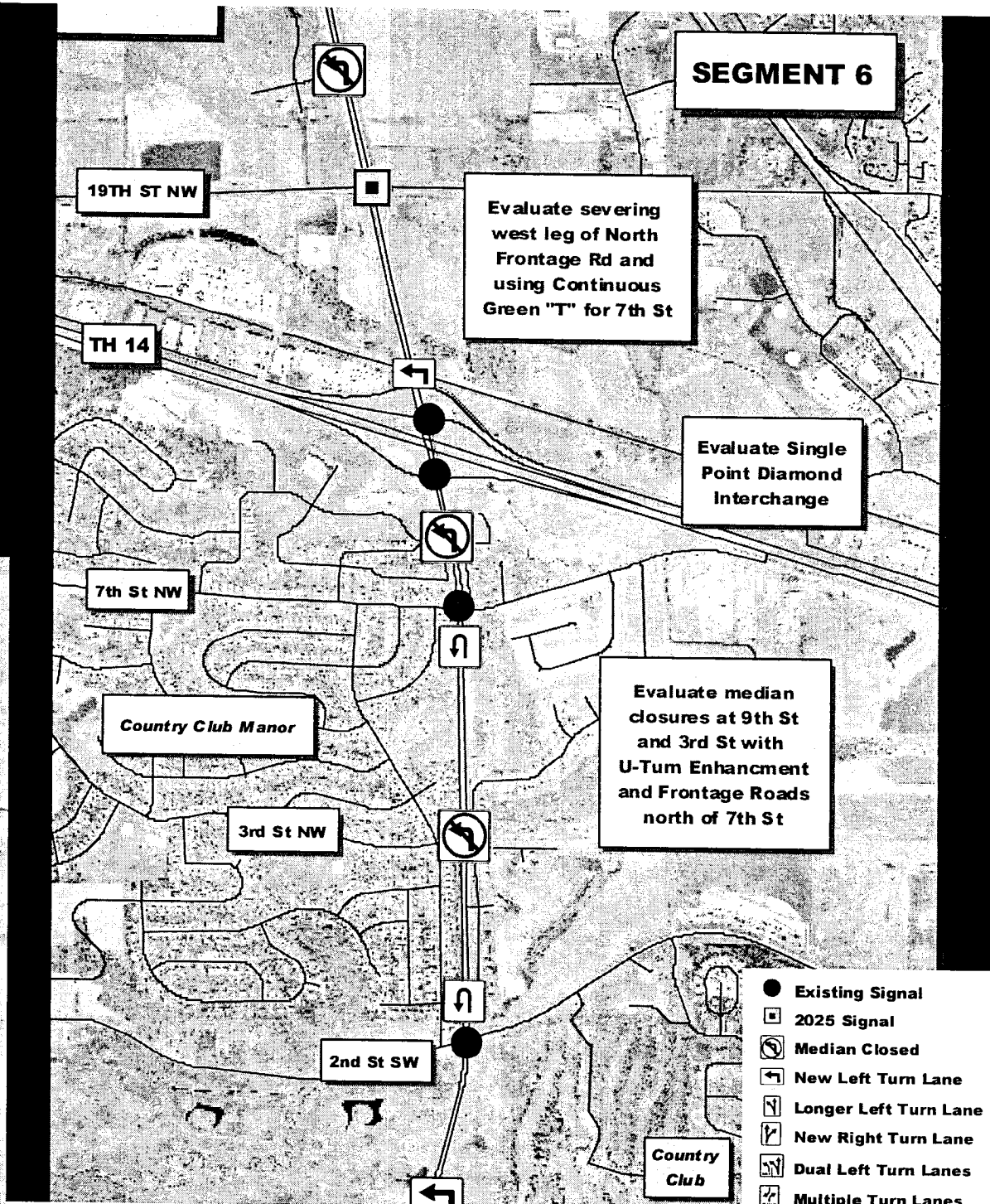
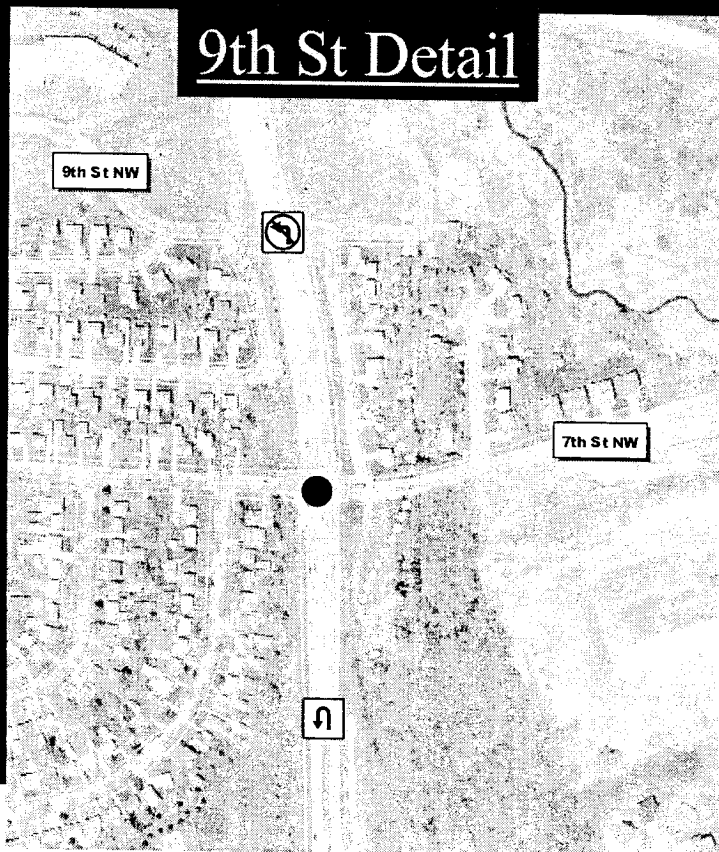


Segment 4: Plan endorsed by City and County in vicinity of TH 52 Interchange 2

Segment 6

Alternatives for further Evaluation

9th St Detail



Segment 7

Alternatives for further Evaluation

*Investigate
methods for
improving side
street left turns at
unsignalized
intersections*

